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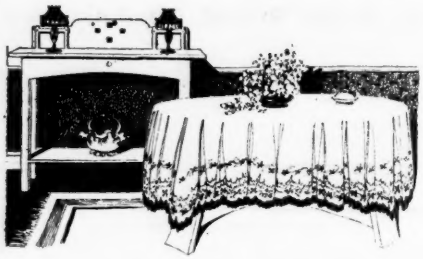

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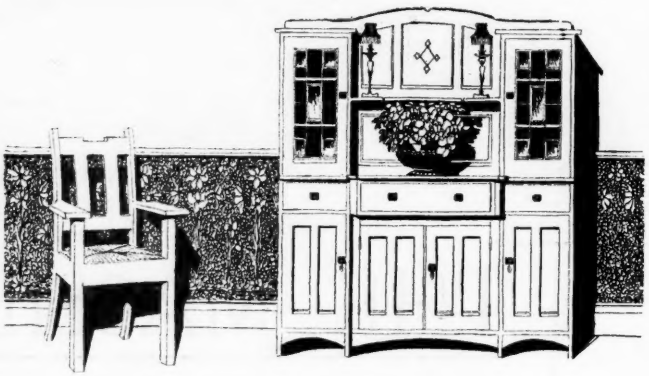

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THE MEDICAL JOURNAL OF AUSTRALIA.

VOL. I.—8TH YEAR. SYDNEY: SATURDAY, JUNE 4, 1921. No. 23.

THE DYSENTERIC INFECTIONS.[1]

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Introduction.

The experience of physicians and pathologists in the Mediterranean war zone proved that the frequent passage of stools containing blood and mucus indicated an inflammatory condition of the large intestine, due to some specific infective agent. In England and America investigations of the colitis occurring in asylums and gaols have shown most of the outbreaks to be due to bacillary dysentery, while different observers have isolated *B. shiga* or organisms of the Flexner-Y group from the stools of children suffering from ileo-colitis. The pathological picture of the large intestine in several fatal cases of so-called colitis occurring in Melbourne during the summer months has resembled closely that of certain types of bacillary dysentery observed by us in Egypt. Furthermore, in this Institute Patterson and Williams have demonstrated organisms of the Flexner-Y group in the stools of many adults said to have colitis and also in some specimens obtained from children suffering from entero-colitis. Dysentery due to *E. histolytica* and *B. shiga* also occurred in their series.

In view of these facts, we hold that clinicians in Victoria can no longer afford to remain content with the simple clinical diagnosis of colitis. They must go a stage further in consultation with pathologists and investigate the various ætiological agents causing the group of entero-colonic diseases. We would suggest that every acute infection of the large bowel in the adult accompanied by febrile manifestations should tentatively be diagnosed as bacillary dysentery and treated as such until clinical and laboratory investigations have disproved the validity of the provisional diagnosis.

It is from this point of view that we are recording our military experience of the dysentery infections, hoping that the subject matter of this paper may be helpful to practitioners.

The Various Types of Dysenteric Infections.

Dysentery does not represent an entity in itself. It is a term referring to any wide-spread inflammatory condition of the colon producing tenesmus and the frequent passage of a stool containing blood and mucus. It may be caused by certain bacteria, protozoa or helminths. In a series of 1,816 consecutive specimens of fæces collected from patients in the No. 14 Australian General Hospital who were suffering from, or who gave a past history suggestive of, colitis organisms of bacillary dysentery, pathogenic entamœbæ, flagellates and ova of *B. mansoni* were isolated as indicated in the following table. In another case, occurring in an Egyptian who died subsequently with dysentery, one of us (H.R.D.) demonstrated the ciliated protozoon—*Balantidium coli.*

At first sight it would appear that the percentage of positive findings in this series was not high. It must, however, be noted that the observations were conducted at a base hospital situated at the end of a long line of communications. In consequence, many of the patients had received efficient medical treatment prior to arrival at the base and were either in a late stage of the disease (fifth to twelfth day) or were actually convalescent when laboratory investigations were undertaken. Frequently the stools contained no mucus, blood or pus.

Another anomaly that requires explanation is the preponderance of amœbic infections (179) over bacillary types (97). Such findings do not represent the actual incidence of the two diseases in the war zone, where bacillary dysentery was much the more frequent disease. The statistics of the field laboratories showed that bacillary dysentery was much the more common infection and the only one giving rise to epidemics of dysentery and proved the wisdom of the policy advocated by Martin of establishing field laboratories near the front lines.

In base laboratories the amœbic infections were more frequently diagnosed because the time factor is unimportant in the laboratory diagnosis of *E. histolytica*, whereas it is impossible to isolate satisfactorily the organisms of bacillary dysentery unless the case is investigated within the first few days of the disease.

Bacillary Dysentery.

The causal organisms (*B. shiga* or bacilli of the Flexner-Y group) appear to be transmitted through the medium of food or water or directly from infected individuals. The house fly has been implicated by several observers, including Manson-Bahr,(1) who

TABLE I.

		Positive.	Negative.	Total.
Bacillary	*B. shiga*	41	229	326
	B. flexner	56		
Protozoal	Amœbæ:		1,025	1,371
	E. histolytica	97		
	Cysts of *E. histolytica*	82		
	Flagellates:			
	Lamblia intestinalis	39		
	Tetramitus mesnili	64		
	Trichomonas intestinalis	63		
	Ciliates:			
	Balantidium coli	1		
Helminthic	*Bilharzia mansoni*	33	87	120

[1] Read at a Meeting of the Victorian Branch of the British Medical Association on April 6, 1921.

isolated dysentery bacilli from the intestinal tract of *Musca domestica* in Fiji in 1910 and later, in October, 1917, found *B. shiga* in house flies caught in the open desert in Sinai, two miles from any camp or human fæcal deposits. A remarkable feature of the transmission of the disease centres in the rapid disappearance of dysentery bacilli from acute dysenteric stools left for a few hours at room temperature and the great difficulty in isolating *B. shiga* or Flexner-Y from even fresh stools in chronic cases. Carriers of bacillary dysentery are practically unknown.

The Laboratory Diagnosis.

Though the clinical picture of bacillary dysentery in a typical case may leave little doubt as to the diagnosis, yet in the majority of cases laboratory data are desirable.

In collecting material for bacteriological investigations, there are four essentials if satisfactory laboratory results are to be obtained:

(1) The specimen must be obtained as early as possible after the onset of the disease, preferably in the first 48 hours.

(2) It must contain mucus, muco-pus or blood. It is not possible to isolate *B. shiga* or *B. flexner* from a fæculent stool lacking a pathological exudate.

(3) The specimen must be delivered fresh and as soon as possible after defæcation. The Committee Upon Pathological Methods(2) (Medical Research Committee) state that the interval should never be longer than six hours.

(4) The receptacle in which the specimen is collected and sent to the laboratory, should not contain antiseptics or urine.

Martin and Williams(3) represented by a graph the possibility of recovering dysentery bacilli from the stool according to the day of the disease on which the material was collected. On the third day positive cultures were obtained in 73%, on the fifth day in 45%, on the seventh day in 18% and on the thirteenth day in 5% of cases.

Active co-operation between the clinician and the pathologist can do much to increase the efficiency of laboratory diagnosis of the dysenteries, but no amount of technical skill on the part of the laboratory worker can compensate for the selection of unsuitable material for bacteriological investigation.

Recognizing the necessity for early diagnosis in bacillary dysentery, most of the pathologists in Egypt and Palestine adopted the system of making a rapid provisional diagnosis, based on the macroscopical and microscopical appearance of the stool.

The presence of fæcal material, the nature of the blood and mucus present, the cytological appearance of the exudate, the presence or absence of *E. histolytica*, cysts, flagellates and bilharzia ova were all noted.

If the cytology of the exudate suggested bacillary dysentery and *E. histolytica*, etc., were absent, the clinician was immediately informed of the provisional diagnosis of bacillary dysentery and early specific treatment was instituted. Subsequently cultural investigations were completed and the final bacteriological diagnosis was made. Such a system of rapid laboratory returns yielded very satisfactory results to the clinician, from the viewpoint of both diagnosis and treatment.

The Macroscopical Appearance of the Stool.

The type of stool in bacillary dysentery varied with the stage of the disease, the extent to which the small intestine was involved and with the diet.

In the early stages fæculent stools were sometimes noted and in certain fulminating cases death occurred before any inflammatory exudate appeared; such a finding was extremely rare. Blood and mucus were generally present, the former being bright red in colour and the latter clear, copious and tenacious. Wenyon and O'Connor's(4) dictum that preponderating mucus and bright blood denote bacillary dysentery proved, in our experience, a reliable rule to follow. Such a stool had little or no fæcal odour. In certain cases a reddish serous fluid containing flakes of mucus and epithelium and resembling "meat washings" was noted. Such a condition always indicated an inflammatory involvement of the small intestine. Later, muco-pus and pus often appeared in large quantities and with convalescence the fæcal content rose, the pus and later the mucus disappeared and finally semi-solid fæculent stools were produced.

The Microscopic Appearance of the Exudate.

The main features of the exudate in bacillary dysentery are seen in Figure I.. It consists of polymorphonuclear leucocytes, red blood corpuscles and macrophage cells. Certain stigmata of toxic spoiling, such as karyolysis, pyknosis of nuclear material and fatty cytoplasmic degeneration were observed in pus cells.

The red blood corpuscles were generally not degenerated and looked fresh. Bacilli were few in number. The macrophage cell—the so-called refractile cell of Dutcher,(5) Jingers(6) and others—was extremely common. These cells were mononucleated, of round or oval shape and measured some 30 μ in diameter. Their origin was from the endothelial cells of vessels—probably in the submucosa—and in certain respects they closely resembled pathogenic amœbæ. Undoubtedly this resemblance led to much confusion in the laboratory diagnosis of the dysenteries, both in Gallipoli and other Mediterranean war zones. Macrophage cells may contain red blood corpuscles and show slight changes of shape. They differ from *E. histolytica* in not being actively motile, in having a small nucleus, with evenly distributed chromatin, and in the absence of differentiation of the cytoplasm into endoplasm and ectoplasm. They are most abundant in the later and healing stages of the disease and in consequence their presence is of prognostic value. The incidence of these various cells in the exudate in 34 consecutive cases from which we cultured dysentery bacilli, was as follows. Pus cells were present in 34, red blood corpuscles in 32 and macrophage cells in 18 specimens.

The Culture of B. dysenteriæ from the Stools.

In the routine diagnosis by cultural methods we adopted practically the same technique as that used by Martin at No. 3 Australian General Hospital. A small piece of mucus from a fresh stool was taken up on a fine forceps, well washed in sterile saline solution and then broken up and inoculated on to a MacConkey's plate. After incubation over-night the plate was examined for non-lactose fermenting colonies—especially small, clear, circular, bluish ones—and several of these were tested for motility a few

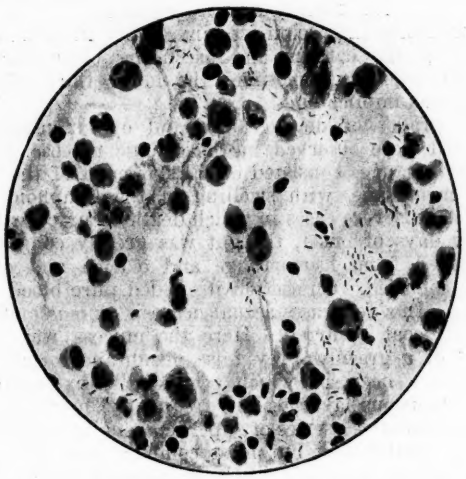

FIGURE I..
The exudate typical of bacillary dysentery, showing pus cells, red blood cells and macrophage cells.

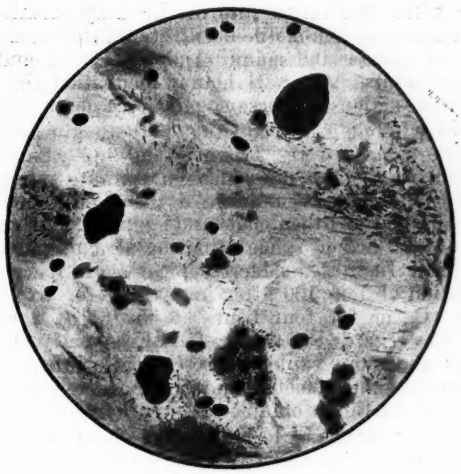

FIGURE II..
The exudate typical of amœbic dysentery, showing a few pus cells, red blood cells taken up by *Entamoeba histolytica* and epithelial débris.

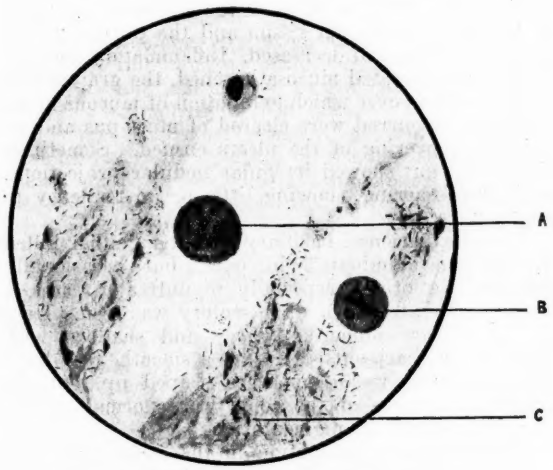

FIGURE III..
(A) Cyst of *Entamoeba coli* with eight nuclei.
(B) Cyst of *Entamoeba histolytica* with four nuclei and chromidial body.
(C) Epithelial débris, bacteria.

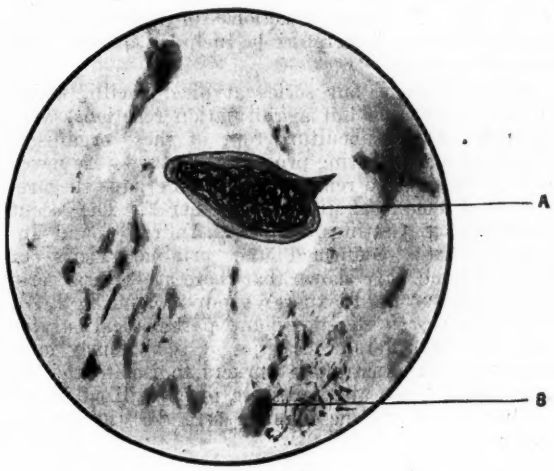

FIGURE IV..
(A) Ovum of *Bilharzia mansoni*, lateral spined.
(B) Pus cell.

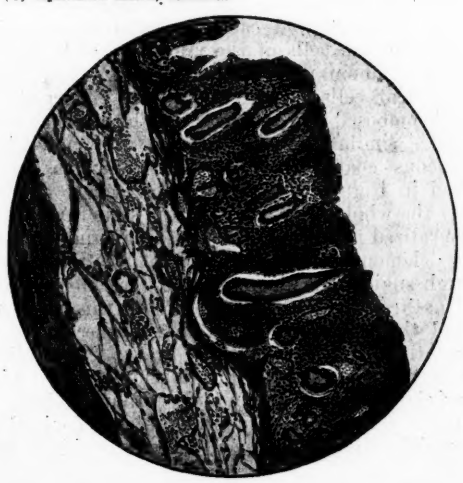

FIGURE V..
Section of colon from a case of acute bacillary dysentery showing acute inflammation of the mucous membrane. Note the superficial location of the inflammatory process.

FIGURE VI..
Section of colon, showing typical amœbic ulceration extending into the submucosa down to the muscular coat.

hours after inoculation into broth. Any colonies of Gram-negative, non-motile bacilli were inoculated into tubes of glucose and mannite peptone water and on to agar slants. After 24 hours' incubation the fermentation actions on these sugars were observed.

Acid without gas production in both glucose and mannite suggested the Flexner-Y group, while acid only in glucose and no change in mannite suggested *B. shiga*. A saline emulsion of the organisms from the agar slant was then made and agglutinated against Shiga and Flexner-Y agglutinating sera prepared at the Lister Institute. Macroscopical agglutination in a dilution of 1 in 100 after incubating for six hours at 37° C., or for four hours at 55° C. on a water bath, was regarded as diagnostic. Frequently we employed the more rapid macroscopical method, with Garrow's agglutinometer, and under the temperature conditions of Egypt obtained very satisfactory results.

Shorter methods of technique have been advocated, but we accept Martin's(7) criticism that any shortening of the classical routine is fallacious, especially with the mannite fermenting group. High titre Flexner-Y serums are not always specific in low grade dilutions and sometimes agglutinate certain strains of *B. coli*. The sugar reactions for lactose, glucose and mannite must therefore be included in any valid routine method.

In six cases of our series atypical bacilli, which yielded everything but agglutination reactions, were isolated. After subculture four of these organisms developed agglutinating properties, but we were never able to classify the remaining two. Perhaps they represented some local strain of Flexner-Y. The recent researches of Gettings, Murray, Andrewes and Inman(8) have confirmed the original views of Kruse(9) and have shown that there are several serological races in the Flexner-Y group (V, W, X, Y, Z). Furthermore, as the dominant pathological strains may vary in different localities, it is obviously most important for Australian workers to isolate the endemic local types and for these to be utilized in the production of specific immune sera for therapeutic purposes.

The Pathology of Bacillary Dysentery.

Our observations on the pathology of bacillary dysentery were largely based on a series of 250 autopsies conducted at No. 3 Egyptian Hospital, Kantara, which was made the headquarters for the pathological section of the War Museum Committee. In this hospital as many as forty Egyptians were dying daily. Fatal cases of dysentery were mostly due to *B. shiga*; where *B. flexner* was isolated, complicating or co-existing diseases were generally found.

The outstanding pathological features of the fatal cases were:

(1) An acute inflammation, involving the superficial layers of the colon and sometimes of the lower third of the ileum.

(2) The stigmata of toxic spoiling in the viscera.

There appeared to be little tendency for *B. dysenteriæ* to invade the extra-colonic tissues or to produce a bacteriæmia. The toxæmic manifestations were due to toxins—endotoxins and possibly exotoxins—absorbed from the superficial layers of the gut.

The Colon in Bacillary Dysentery.

The descending colon was invariably involved and generally the caecum and ascending colon showed typical lesions. Sometimes the lower third of the ileum was implicated.

All grades of degeneration and of inflammatory reaction were observed in the colonic mucosa. The earliest changes consisted of a hyperæmia of the mucous membrane, with swelling of the lymphoid deposits. In severe cases in which death occurred within a few days of onset, the gut was greatly congested, thickened from hæmorrhage and œdema and often plum coloured. On section it exuded pure blood and serum. In a few cases actual necrosis *en masse* of the mucous coat occurred. Here the mucosa was composed of a greenish-grey false membrane formed by a massive necrosis, which occasionally extended to the submucous layer. More frequently, however, the colon presented a series of superficial snail-track ulcers widely distributed, but most common over the lymphoid areas, especially in the descending colon. The areas of the mucosa between the ulcers were definitely inflamed. In the later stages reparative changes were established. Here the bases of the ulcers were formed of healthy granulation tissue and the purulent exudate from them had decreased. Inflammatory changes in the non-ulcerated mucosa lessened, the granulation tissue surfaces over which exfoliation of mucous membrane had occurred were cleared of muco-pus and an epithelial covering of the ulcers ensued. Sometimes the healed gut showed irregular nodular projections, with thin scarring, showing little or no tendency to contracture.

In our experience, bacillary dysentery either killed quickly or culminated in cure, but occasionally amongst Egyptians, especially in untreated cases, a chronic ulcerative type of dysentery was seen. Here the ulcers are numerous, large and shallow, with shelving or sharp-cut edges and a smooth, firm base. Their margins were sometimes heaped up, but the intervening areas of the colon were normal, except for the presence of pigmentation.

Microscopical examination in the earliest case revealed vascular dilatation and engorgement of vessels with infiltration of the mucous layer with mononuclear cells. Increase in the mononuclear elements was most marked in the lymphoid areas.

Later types showed early coagulation necrosis of the parenchyma cells of the mucosa, which was infiltrated with fibrin, red blood corpuscles, leucocytes and mononuclear cells. The vessels were engorged, some were thrombosed and peri-vascular hæmorrhages were present. Similar vascular changes were noted in the submucous coat. Most of these changes may be studied in Figure V.. In the most severe types (*B. shiga*) the whole mucous layer was structureless from a generalized necrosis of the glandular and connective tissue elements. Examination of sections passing through snail-track ulcers showed the constant superficial nature of the lesions; the depth rarely extended beyond the *muscularis mucosæ* and the ulcers were frequently related to lymphoid areas. The walls and base were composed of granulation tissue, with a superficial coating of fibrin and cellular exudate. This disappeared later and an epithelial layer derived from the proliferation of adjacent glands could be traced

in various stages growing over the granulation tissue surface of the ulcer. Examination of the irregular polypoid masses occasionally noted macroscopically proved them to be submucous inclusion cysts filled with mucus. They were produced by the burying and isolation of epithelial remnants in a granulation tissue barrier.

Pathological Changes in Other Organs.

In the most severe infections a remarkable gelatinous œdema of the mesentery was noted. The mesenteric veins and venules were engorged and the intestinal lymph glands were enlarged, softened and reddened. A serous ascites was occasionally observed. Congestion and softening of the spleen, with slight enlargement, were common. In one case multiple splenic abscesses, from which *B. flexner* was isolated, were observed. The patient, however, had previously suffered from relapsing fever (*S. berbera*), in which splenic infarction is common. We therefore regarded the pathology of the condition as a primary spirochætal infarction with a secondary infection by *B. flexner*. This was the only instance in our series in which a dysentery bacillus was isolated from organs other than the colon.

Frequently the liver and kidney showed cloudy swelling and microscopically degeneration of the tubular renal epithelium was noted. Albuminuria was not infrequent in such cases.

Perhaps the most constant of the extra-colonic lesions was toxic spoiling of the myocardium. The heart muscle presented a soft and flabby appearance, with dilatation of the bicuspid and tricuspid orifices. Endocarditis was not observed, but a serous pericarditis was common.

Occasionally the lungs showed hypostatic congestion, areas of collapse or even a terminal bronchopneumonia.

Causes of Death.

The cause of death in the acute cases (*B. shiga*) was a systemic toxæmia producing a toxic myocarditis and cloudy swelling of such organs as the spleen, kidneys and liver. In a few cases a terminal pneumonia was noted. Fatal infections with *B. flexner* were associated with other disease as a general rule and the most severe pathological types, as described above, were not met with.

In the chronic cases the patients died from inanition, exhaustion and intercurrent diseases.

The Complications.

Owing to the superficial nature of the ulceration, local complications have not been frequently observed. No case of intestinal perforation, severe hæmorrhage or local extra-colonic abscess was met with. Even in the chronic cases the cicatricial contraction of ulcers did not tend to produce intestinal obstruction.

On the other hand, the following complications, due to systemic toxæmia, were observed: (1) Myocarditis, (2) arthritis, (3) iritis.

We have already referred to the frequency of myocarditis and serous pericarditis at autopsy; this condition undoubtedly formed the basis of the tachycardia and cardiac irregularities observed clinically during convalescence from bacillary dysentery.

Arthritis must be regarded as a true complication of bacillary dysentery. Twenty-four cases occurred in the wards of No. 3 Egyptian Hospital, Kantara. The knee-joints were always involved and in three cases the shoulder-joint as well. The culture media with the arthritic fluid remained sterile in the only case investigated. Suppuration did not occur. Essentially the condition appeared to be a serous synovitis, which tended to run a subacute or chronic course and to be accompanied by periarthritic changes with muscular atrophy and tendency to contracture.

Iritis was frequently noted amongst the Kantara cases of bacillary dysentery, but so was relapsing fever, which also may produce iritis. It was therefore difficult to estimate its true incidence. This complication was observed, however, in uncomplicated cases of *B. shiga* infection.

The Clinical Picture in Bacillary Dysentery.

The clinical picture of bacillary dysentery is that of systemic toxæmia associated with evidence of acute inflammation of the colon. Many different clinical types are met with; but, in our experience, all the severely toxic and the choleraic types are Shiga dysentery. Types of average severity may be caused by either *B. flexner* or *B. shiga*, while the mild types are generally Flexner infections.

The onset of bacillary dysentery is sudden, with febrile manifestations, vomiting, rapid pulse and the frequent painful evacuation of small stools containing bright blood and clear, tenacious mucus. Abdominal pain and tenesmus are present and headache, generalized pains and occasionally shivering attacks may be noted. Manson has described the patient during the first few days as being "glued to the commode." Certainly the description is accurate, for the bowels may act forty to sixty times during the first 24 hours. The abdominal muscles may contract on palpation, but are not rigid; the sigmoid and, more rarely, other parts of the colon may be contracted in spasm—the probable basis of the severe abdominal pain in these cases. The temperature chart is irregular in type, often remittent, and in collapsed patients apyrexia occurs. The pulse is rapid and is frequently increased out of proportion to the fever.

A dry tongue and skin, persistent vomiting, rapid pulse and nervous prostration indicate a severe toxæmia.

In the choleraic type the sunken eyes, dry skin, dry brown tongue, muscular cramps, diminishing quantity of urine, persistent vomiting and the frequent passage of serous stools, indicate severe involvement of the ileum and a grave prognosis.

The fulminating gangrenous type is initiated by high fever, vomiting, rigors and rapid pulse. Manson-Bahr(10) has emphasized the significance of the disappearance of abdominal pain and tenesmus in these cases, while the toxæmic features are persisting or increasing. Such findings are indicative of a fatal issue, the amelioration of local symptoms being due to gangrene of the gut.

Apart altogether from these hypertoxic varieties, many intermediate types are met with.

In many cases, with appropriate treatment, a rapid improvement occurs and after four or five days of acute illness the patient recovers. In other cases improvement is more gradual and convalescence prolonged. Untreated cases, in which early death does not occur, may drift into an intractible type of chronic ulcerative colitis.

The Treatment of Bacillary Dysentery.

Therapeutic measures have to be directed:

(*i.*) To the local lesions in the entero-colon.

(*ii.*) To combating the systemic toxæmia.

(*iii.*) To reinforcing the volume of the circulating fluid where excessive depletion from vomiting and serous diarrhœa has occurred.

(*i.*) The local condition of the bowel is treated by rest in bed, a preliminary period of starvation, followed by careful dietary, and the systematic administration of sulphate of soda in doses of 7.2 grm. every two hours for the first day and subsequently at four-hourly intervals. *Oleum ricini* (15 c.cm.), with *tinctura opii* (1 c.cm.) may be given at the onset of the illness. Blackburn(11) attaches importance to the fact that milk is harmful during the acute stage and, while allowing a liberal allowance of water, withholds all food until yellow or brown fæculent material reappears in the stool. Saline enemata are continued until the motions are fæculent. We would point out the necessity for controlling dietetic treatment by the daily macroscopical and microscopical examination of the stools and the fact that specific serum exerts a very beneficial action on the local colonic lesions.

(*ii.*) The systemic toxæmia is best combated by the administration of large doses of polyvalent anti-dysenteric serum. Manson-Bahr(12) first advocated the administration of large doses of serum (60 c.cm. to 100 c.cm.) on the Palestine front and suggested that the injection should be given into the adductor muscles of the thigh. If improvement did not ensue in the subsequent twelve hours, the injection was repeated. From personal observations we are fully convinced of the great value of this treatment, provided it is given early and the serum is administered in sufficient dosage. Such treatment is certainly indicated in *B. shiga* infections and also in the more severe *B. flexner* types. Undoubtedly correct dietetic and saline treatment will cure many Flexner infections, apart from serum therapy, but even with Flexner infections, provided the patient is seen early in the disease, serum treatment should be employed.

(*iii.*) A diminution in the volume of circulating fluid should be treated by the intravenous injection of 0.5 litre to 1 litre of normal saline solution, Roger's hypertonic saline solution or normal saline solution containing 5% glucose.

The treatment of chronic ulcerative dysentery is disappointing. Dietetic measures, combined with colonic lavage with silver salts, are employed. Serum treatment is of doubtful value. Vaccines have been advocated. If these be used, we would suggest that cultures should be obtained from the cleansed base of the ulcer during sigmoidoscopy. Bacilli can be isolated from these lesions at autopsy where repeated examinations of the excreta during life have proved futile. Appendicostomy is a useless procedure.

Amœbic Dysentery.

In our Kantara autopsies, one out of every five cases of dysentery was due to *E. histolytica*; it was therefore a common disease and one necessitating accurate diagnosis if fatal results were to be avoided.

Within the last two months two fatal cases of infection with *E. histolytica* have occurred in the Melbourne Hospital. The disease is therefore one which must receive the consideration of the practitioner.

The Laboratory Diagnosis.

In active infection with *E. histolytica* the stool contains dark blood and discoloured mucus intimately admixed with fæcal matter. The stool is foul smelling, but rarely contains sloughs.

Active *E. histolytica* is found in freshly passed mucus. Microscopical examination of a recent stool shows the presence of cell débris, bacilli of all types, pus cells, red blood corpuscles and active amœbæ. (See Figure II..)

In the polymorphonuclear pus cells true nuclear degeneration is not a marked feature, but Willmore and Shearnan(13) state that their cytoplasm is degenerated and ragged, due to proteolytic enzymes liberated by *E. histolytica*. These observers attach diagnostic value to the cytoplasmic changes, but we agree with Woodcock(14) in believing that the only typical feature of the amœbic exudate is the presence of *E. histolytica* itself.

In fresh preparations *E. histolytica* is recognized by its active explosive movements, the presence of red blood corpuscles in the endoplasm and the absence of other inclusions. The ectoplasm is clear and hyaline, the endoplasm finely granular, but the nucleus in the fresh state is indistinct and eccentric. In the degenerated forms or in stained preparations the typical nucleus, with its central nucleolus and circular ring of chromatin, can be studied. (See Figure II.) *E. coli* is sluggish in its movements, does not contain red blood corpuscles, but constantly has other inclusions and has a larger, better defined nucleus, while the endoplasm and ectoplasm are not so clearly demarcated as in *E. histolytica*.

The cysts are found in the solid fæces and both saline and iodine preparations should be examined. The cysts of *E. histolytica* vary generally between 7 μ and 14 μ, do not contain more than four nuclei, generally possess a chromidial body and a thin cyst wall. Cysts of *E. coli* are larger, possess more than four nuclei, do not show a chromidial body and have thicker walls. Time prevents a description of the free and encysted stage of *Endolimax nana* and *Iodamœba bütschlii*. (For cysts, see Figure III..)

The Pathology of Amœbic Dysentery.

The lesions of amœbic dysentery are confined to the colon, especially to the caecum and ascending portions, though the sigmoid and pelvic portions may also be involved.

The general appearance of the colon does not suggest an acute inflammation, as in bacillary dysentery. The process is subacute or chronic in character and presents marked patchy thickening, involving all the coats of the large bowel, with scattered ulcers. In the intervening areas the gut wall may appear little changed.

The ulcers vary in size from 0.6 cm. to 5 cm. and are generally placed longitudinally. They are always deep and frequently the circular muscular coat is exposed. On section they appear bottle-necked, with maximal involvement of the submucosa. The base of the ulcer is often composed of necrotic black tissue and its edges are ragged and undermined. Sometimes adjacent ulcers communicate by tunnel-

ling the submucosa. In the vicinity of these ulcers the bowel wall is always thickened. Elsewhere it may be thinned and ballooned. Sometimes a massive gangrene of the wall of the colon occurs. The caecum is often so involved and presents an œdematous, friable, black, thickened wall. All coats are implicated and large shaggy perforations, even up to 5 cm. in diameter, occurred in our series. This condition is known as a gangrenous colitis and is invariably fatal.

We had abundant opportunity of studying the microscopical lesions in all stages of amœbic infections. The amœbæ appear to traverse the mucosal layer and lodge in the submucosa. Here they proliferate and by the elaboration of toxic substances cause a gelatinous, hyaline degeneration, unassociated with any marked cellular response. Thrombosis of vessels is readily observed in microscopical section and is due to degeneration of the endothelial layer of vessels, with consecutive clotting. Such

FIGURE VII..
Part of Figure VI. (high power), showing *Entamoeba histolytica* in submucosa, thrombosis of veins and lack of the intense cellular reaction characteristic of bacillary dysentery.

thrombosis is responsible for metastatic liver abscess and also for the condition described as gangrenous colitis. (See Figures VI. and VII..)

The Complications of Amœbic Dysentery.

Owing to the deep nature of the ulcers and the tendency to thrombosis, local complications are common. In our series of cases there were seven deaths from perforation secondary to gangrenous colitis. Two patients were operated on and died, while five came to autopsy without operation. The hopelessness of surgical intervention in these cases can only be appreciated after having examined the friable, thick, sloughing caecum at autopsy. In six cases the perforation originated in the caecum or ascending colon and in the seventh in the descending pelvic colon.

Severe hæmorrhage is stated to be one of the complications of amœbic ulceration, but we did not observe it.

The cicatricial contraction in deep amœbic ulcers may lead to intestinal obstruction. This tendency was observed in one case, the obstruction being situated in the sigmoid; but as the patient was also infected with *B. mansoni*, it was difficult to decide if *E. histolytica* alone were responsible for the complication.

Of the more distant complications, hepatitis and amœbic abscess of the liver were frequent. Six cases of liver abscess were examined by us at autopsy. Of these, three were single, two were multiple in the liver and the sixth was associated with pulmonary abscess. All the hepatic abscesses involved the right postero-superior quadrant of the liver. Of five other patients operated on by one of us (H.R.D.), two recovered and three died, while we saw two other cases of liver abscess which were naturally cured by evacuating their contents *viâ* the diaphragm and lung through a bronchus.

In our experience, amœbic pulmonary abscess has always resulted by direct spread across the diaphragm from an hepatic abscess.

The Clinical Picture and Treatment of Amœbic Dysentery.

The onset of amœbic dysentery is insidious and the course is subacute or chronic in type, unless complications modify the clinical picture. Febrile manifestations are generally absent, unless complications ensue. The patient complains of looseness of the bowels and straining at stool and the defæcation may occur four to twelve times daily. The stool is often composed of dark blood and discoloured mucus, which are intimately admixed with fæcal matter. Tenderness in the course of the colon is not uncommon. Other common features are loss of weight, anorexia, rectal discomfort and a secondary anæmia. The leucocytosis is generally under 15,000 per c.mm. in an uncomplicated case.

Hepatitis, or amœbic abscess of the liver, may be the first condition to cause complaint on the part of the patient. A history of previous bowel trouble may be absent. In the differential diagnosis between hepatitis and abscess the response to emetine treatment is important. A total leucocyte count of over 20,000 leucocytes per c.mm. and a differential count exceeding 80% of polymorphonuclear cells definitely indicate pus. The symptomatology of amœbic abscess is variable and cannot be considered in detail, except to direct attention to the frequency of involvement of the base of the right lung, signs of which may be present without any demonstrable hepatic enlargement. Apart from hepatomegaly the loss of weight, the muddy pallor, the remittent temperature chart, the tendency to sweats and the leucocytosis, all suggest some occult focus of suppuration.

The treatment of amœbic dysentery consists of appropriate rest, suitable dietary and the daily injection subcutaneously of 0.06 grm. of emetine hydrochloride for ten days. The course is repeated a fortnight later, if dysenteric symptoms persist or if *E. histolytica* reappears in the stools. An interval is advisable, as emetine has a cumulative action in the tissues and overdosage causes intestinal irritation, cardiac weakness or even dangerous collapse.

Patients with cysts in the excreta are best treated with the insoluble salt, the double iodide of bismuth and emetine, as recommended by Dale and Dobell.(15) These observers advocate 0.18 gramme, given in gelatine capsules at night, over a period of twelve days. Owing to the persistence of cysts in the excreta in small numbers for long periods of time, it is not easy

to estimate just when cure is established.

While hepatitis can be cured by emetine, the treatment of amœbic abscess is essentially a surgical problem. Owing to the thick, tenacious nature of the degenerated content of the abscess, it is futile to explore with a needle of ordinary calibre. One the size of a small trochar should be substituted. Even then difficulty may be met with in aspirating the pus, despite the fact that the needle is in the abscess. The transpleural route affords the most effective approach for abscesses situated in the postero-superior portion of the right lobe and a large calibre tube is used for drainage. The abscess cavity should be washed out daily with 10% bihydrochloride of quinine, provided it does not communicate with the lung. The frequent presence of multiple abscesses must not be forgotten.

Bilharzial Dysentery.

This type of dysentery was observed, both amongst Australian troops and members of the Egyptian Labour Corps. The diagnosis was made by finding the lateral-spined ova (*B. mansoni*) and occasionally terminal-spined ones also in the mucus coating of the stool. (See Figure IV.) Two pathological types occurred.

(*i.*) Acute bilharzial dysentery, associated with recent deposits of ova in the submucosa of the colon and ileum.

(*ii.*) Chronic bilharzial dysentery, associated with polypoid masses in the colon and, where these had sloughed away, with circular ulcers.

The acute bilharzial dysentery was often associated with fever, urticaria, hepatomegaly, high eosinophilia and the passage of a bloody mucoid stool *per rectum*. The chronic type resembled closely amœbic dysentery and was often associated with a periportal cirrhosis of the liver, which was, however, rarely detected clinically.

The blood examination for eosinophilia and the complement fixation reaction were of great value in diagnosis, while sigmoidoscopy was sometimes useful.

The treatment consists of the intravenous administration of tartar emetic, a total course of at least 1.5 grm. being, in our opinion, advisable.

Other Forms of Dysentery.

Since the ætiological significance of the flagellates in the production of dysentery is undecided, it is hardly relevant to consider them in any detail.

Lamblia intestinalis has the greatest claim to pathogenicity and, where other known factors have all been excluded, may be regarded as the causal agent.

Balantidium coli was responsible for one case of fatal dysentery in our experience. Clinically the case resembled *E. histolytica* infection. Unfortunately, no autopsy was made.

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EPIDEMIC DIARRHŒA.[1]

A Preliminary Account of Observations Made in Melbourne During the Summer Months, 1920-1921.

By **S. W. Patterson,**
and
F. E. Williams.

(From the Walter and Eliza Hall Research Institute.)

We propose to deal with the subject of epidemic diarrhœa as it affects a civil population in peace time; and from the work done this summer in an investigation which is being carried out at the Walter and Eliza Hall Institute for Research, to draw conclusions that may be of interest to practising physicians. We would lay it down as a thesis for discussion that a high proportion of epidemic diarrhœa is infectious in origin. Our material has been specimens from ninety cases occurring from December to March in the Melbourne Hospital and in the practice of physicians who have been kind enough to send us samples of fæces from cases of this nature.

Clinical Types.

The clinical features of these cases have been of the most diverse kind:

(*i.*) Five patients were returned soldiers who had had dysentery on active service; in two of these *Entamœba histolytica* was found and in one a Flexner bacillus.

(*ii.*) Two cases of liver abscess originated in an unsuspected chronic amœbic colitis.

(*iii.*) Twenty-eight cases of diarrhœa occurred in aged patients with chronic nephritis; sixteen of these died. In fourteen of the twenty-eight the colon was affected and from five we isolated a Flexner bacillus and from three others Morgan's bacillus No. 1.

(*iv.*) Ten of the patients were children; six had blood and slime in the stools, three of these yielded a Flexner bacillus on culture and a Morgan bacillus No. 1 was isolated from a case of chronic diarrhœa. A breast-fed baby seven months old, with acute diarrhœa for three days, passing blood and muco-pus, harboured a Flexner dysentery bacillus.

At one of the summer resorts on the Bay a severe epidemic of diarrhœa occurred and affected most of the people staying in the neighbourhood. A specimen of fæces from one of the children affected gave cultures of Flexner bacilli.

(*v.*) A man was admitted to hospital with severe

[1] Read at a Meeting of the Victorian Branch of the British Medical Association on April 6, 1921.

vomiting and diarrhœa a few hours after eating a stew. From his fæces we isolated one of the food poisoning bacteria, *B. suipestifer*.

Through the kindness of Dr. W. R. Boyd I was enabled to investigate a small epidemic of severe diarrhœa in a boarding-house. Altogether eleven people were affected. In two cases we isolated the *B. suipestifer* from the stools and the blood of four patients later caused agglutination when added to emulsions of this bacillus, so that the infection of the whole household was probably due to this germ.

(*vi.*) There was also diarrhœa following indigestible foods or excess of alcohol. In these cases no pathogenic germs have been recovered.

Pathological Grouping.

When the fæces are examined macroscopically and microscopically, a classification can be made into:

(*i.*) Those cases showing blood and mucus or muco-pus; an acute colitis. In this group pathogenic organisms were recovered in 71%; Flexner dysentery bacilli in 66.6%. (See Figure I.)

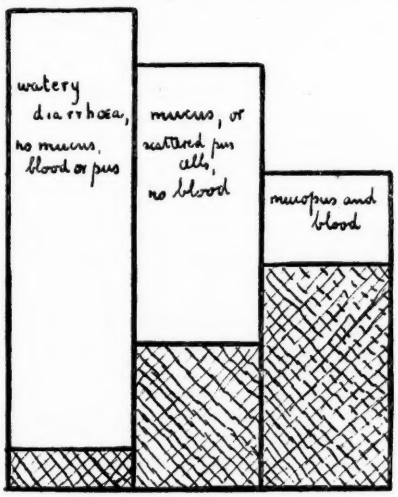


FIGURE I..

(*ii.*) Those showing pus cells or old muco-pus, perhaps mixed with some fæcal material; a sub-acute or chronic colitis. In these, 34% gave pathogenic organisms.

(*iii.*) Loose, watery, greenish motions, without mucus or pus; an enteritis. Three per cent. gave bacteria of recognized pathogenicity.

The actual numbers and types of pathogenic organisms recovered are shown in the table:

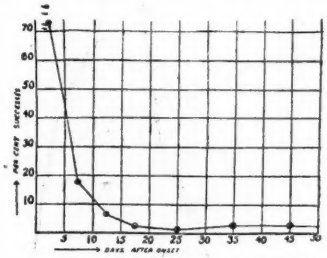
TABLE OF ORGANISMS.

Organism.	Cases.
Entamœba histolytica	4
B. dysenteriæ Flexner	18
B. dysenteriæ Shiga	1
B. suipestifer	5
B. morgan No. 1	4
Streptococcus hæmolyticus	1
B. tuberculosis	1

The Shiga dysentery bacillus was isolated from an Indian seaman admitted to hospital from an oversea vessel; the hæmolytic streptococcus was recovered *post mortem* from a bowel showing numerous punched out, tiny ulcers of the mucous membrane of the ileum and caecum; a patient admitted moribund, suffering from a condition labelled "gastro-enteritis" was found to have tuberculous ulceration of the intestine.

Diagnosis.

It may reasonably be asked what chance the laboratory worker has of making a positive diagnosis in these cases. Dr. Fairley (1) has insisted on the necessity for examination of the fresh fæces in the early stages of the complaint, in order to obtain the best results. This is illustrated by the chart compiled from the figures of Dr. C. J. Martin and Miss Williams, (2) who examined 1,050 cases of dysentery at various times after the onset. (See Figure II..) It



Graph representing success in recovering dysentery bacilli from the stools at different periods after the onset of the disease (1,050 examinations)

FIGURE II..
(After Martin and Williams.)

will be seen how rapidly the percentage of positive findings falls off as the disease progresses. In our own series we obtained 71% pathogenic bacteria in the acute stage and only 34% in the subacute and chronic cases.

Failing the finding of the pathogenic bacteria in the fæces, can we by means of an immune reaction in the patient's serum come to a positive diagnosis? Can a method comparable with the Widal reaction in typhoid fever be of use? Here again we quote the figures obtained by Colonel Martin and Miss Williams. (3) (See Figure III..) It will be noticed that cases in which Shiga's dysentery bacillus was found,

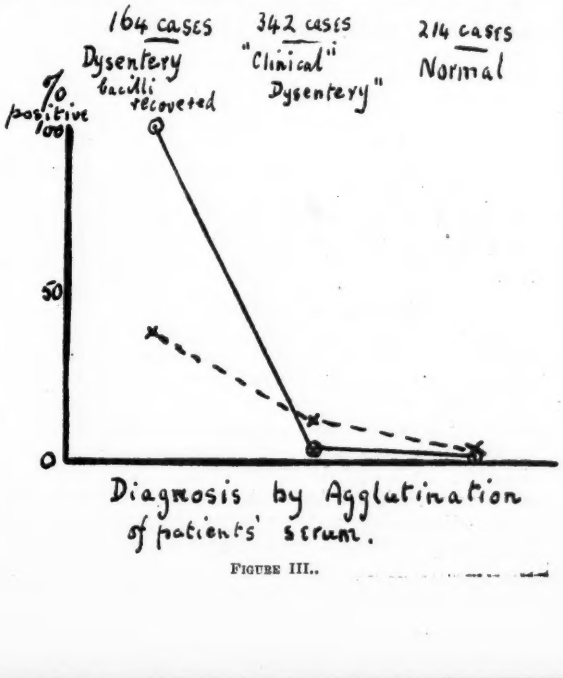


FIGURE III..

all yielded an agglutination reaction in the blood, while the reaction in proved Flexner dysentery was not nearly so successful. When, however, the patient's serum was put up at the same time with several races or strains of Flexner bacilli, a much higher percentage of reaction was obtained (see Figure IV.) and

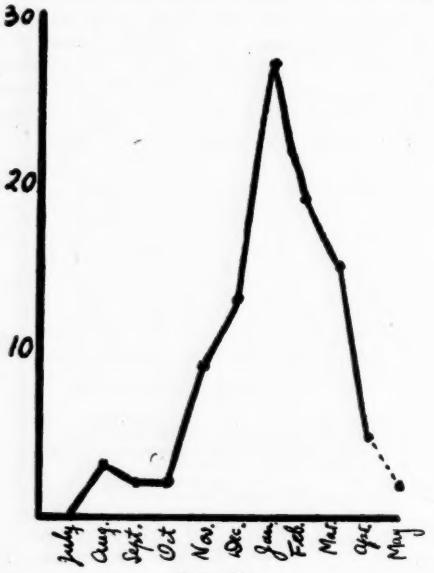


FIGURE IV..

the test becomes of considerable diagnostic value. This question of different races or strains of Flexner bacilli will be referred to again.

Dysentery.

Amongst the laity a severe diarrhœa is called "dysentery"; but in the profession of recent years the term "dysentery" has been dropped and the symptomatological diagnoses of "gastro-enteritis," "enteritis," "ileo-colitis" or "colitis" are used.

Forsyth, (4) in a careful piece of work during the summers 1910-1913, examined over 300 cases of diarrhœa in children in Melbourne; as the result of his observations, he concluded that 81% of cases of entero-colitis gave cultures of pathogenic bacteria of the dysentery and enteric group; he found dysentery bacilli in 33% of the cases. He also found that the bacteriological finding had considerable prognostic value. Patients who appeared most acutely ill, were infected with the Shiga-Flexner dysentery bacilli. Cases of slower development and tendency to chronicity were found to be due to Gaertner bacillary infection. Cases showing a Morgan bacillus were between the other two in virulence.

Our own observations this year show that a considerable number of cases of diarrhœa in adults and children are true infections. Patients passing blood and slime in their motions should be regarded as suffering from "clinical dysentery," that is, a definitely infectious disease. We shall not make progress either in our knowledge or treatment of these diseases until we are dissatisfied with the purely symptomatological diagnosis, gastro-enteritis and unless we make the attempt to define the cause of the complaint.

Specific Treatment.

Our work with antidysentery serum is not far enough advanced to allow of more than a preliminary report. The Flexner-Y group of dysentery bacilli, which we have isolated most frequently, comprises several races. We are at present working on our eighteen strains, together with six received from Dr. Reginald Webster at the Children's Hospital and five strains isolated this summer at the Adelaide Hospital. We are preparing a serum with each strain and testing it out against each of the others. In this way we shall estimate the prevalence of the various strains in southern Australia. When this is done, we shall hand over the type cultures to Dr. Penfold for the preparation of a polyvalent serum efficacious against the local races that may be tested out and used next summer.

Dysentery bacilli multiply in the mucous membrane of the large intestine, from which their toxins are absorbed into the body; an immunizing serum must be both antimicrobic and antitoxic. The immune serum does neutralize toxins and when added to bacteria causes lysis. Rabbits injected with dysentery bacilli show an œdema poor in leucocytes; in animals treated with serum there is great increase in leucocytes with active phagocytosis. From 0.25 c.cm. to 0.5 c.cm. of serum protects a rabbit against a lethal dose of living bacilli and protection is obtained with 1 c.cm. to 2 c.cm. of serum injected one day after a dose of bacilli that will kill in three to four days.—Bordet (5).

In the treatment of dysentery Klein (6) used large doses (60 c.cm. to 100 c.cm.) of serum intravenously at intervals of eight hours; the serum must be given early. During the first five or six days of the disease antidysenteric serum had a favourable effect, both in averting the fatal issue and hastening recovery; cases of six to ten days' duration were not influenced much by serum, except in large doses; after the tenth day it was practically useless.

Waller (8) reports experiences in Mesopotamia with the subcutaneous administration of serum. With early use the patients had a shorter acute stage, less tendency to chronicity and more satisfactory convalescence.

Nolf, (9) working with the Belgian Army, found serum useless for chronic forms; he used a vaccine, autogenous or stock Flexner, intravenously with good results in protracted cases.

Banu and Baroni, (10) in chronic cases of Flexner dysentery treated by vaccines, reduced their mortality from 78% to 8%.

Carriers.

Another result of our method of regarding cases of epidemic diarrhœa as probable dysentery is that we shall recognize their infectiousness and take steps to prevent the spread of the disease. The dysentery bacilli are relatively fragile and non-resistant to hard conditions; but even the Shiga bacillus has been found to survive for 24 days in river water stored at room temperature. It quickly dies out, however, when kept at blood heat. The fly has been shown to carry dysentery bacilli on its feet and legs and the examination of the fæces of flies caught in infected areas frequently gives cultures of dysentery bacilli. Dr. Bear, of Adelaide, in a personal communication, says that he investigated the homes of seventeen children suf-

fering from enteritis. He found that in fifteen the houses were small and in close proximity to stables and that flies were numerous. Forsyth notes that ward infection and cross-infection had been met with, in spite of the skilled nursing obtaining at the Children's Hospital. We have already mentioned the case we investigated this year of a breast-fed baby whose infection probably came from an older child in the same house which had had an attack of severe diarrhœa. At Dromana this summer the epidemic was so wide-spread, I am told, that many people fled to avoid it.

In France, Flexner dysentery, though prevalent, was rarely fatal amongst the British troops, unless as a complication of a severe wound or serious illness; but when the emaciated German prisoners came over in droves at the end of 1918, deaths from Flexner bacillary dysentery were very frequent.

An attack of diarrhœa, which may be little more than an inconvenience to healthy adolescents and adults, may thus be the cause of a severe and often fatal illness in young children, old people and those with lowered resistance, such as the inmates of institutions and asylums.

Conclusions.

1. From 36% of all cases of gastro-enteritis investigated this summer, pathogenic organisms were isolated and from 71% of the acute cases.
2. Determination of the causative organism will enable specific treatment to be instituted.
3. Recognition of the infectious nature of these diseases should lead to adequate measures to prevent their spread.

Addendum.

Incidence of Enterocolitis.

The admissions to the Melbourne Hospital of cases of "gastro-enteritis" during the last twenty years are shown in Figure V., and the number of deaths from these diseases in the corresponding years. The admissions month by month for the year 1920-1921 are shown in Figure VI.. The greatest incidence of

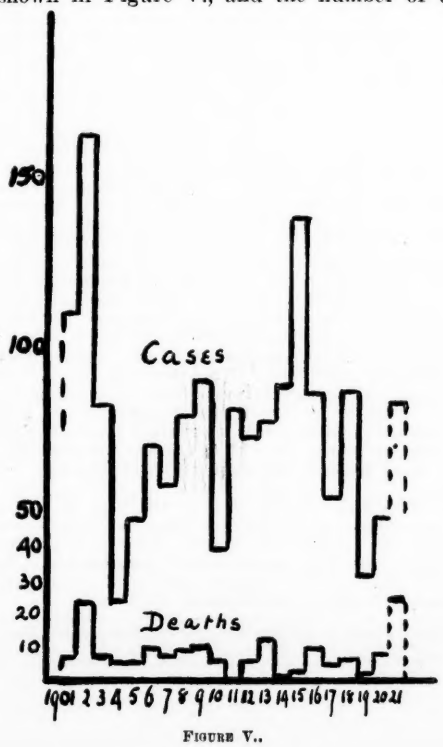


FIGURE V..

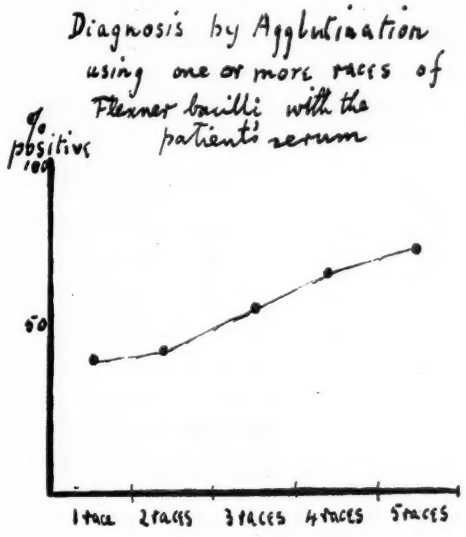


FIGURE VI..

these diseases occurs in the hot years and during the hot season of the year; and practitioners should be most alert for cases of the diarrhœal group of diseases at these times.

Races of Flexner Bacilli.

We regarded as Flexner bacilli all non-motile bacilli isolated which fermented glucose and mannite without the production of gas and did not ferment lactose and which agglutinated with the Commonwealth Serum Laboratories' polyvalent Flexner or Y agglutinating sera.

With known races of Flexner-Y bacilli imported from England, we prepared monovalent sera from Australian wild rabbits. These races have been grouped by Andrewes and Inman into V, W, X, Y and Z, according to agglutination and absorption experiments (10). We found the local strains investigated by us to fall into groups as shown in the table.

From six patients showing clinical signs of dysentery, we isolated a type of organism which showed certain peculiarities when further investigated, although bearing a superficial resemblance to Flexner bacilli. On the McConkey plate made with an emulsion of the fæces, the colonies do not ferment lactose, but have a spreading margin. The bacilli are non-motile and give acid only in glucose and mannite and are without action on lactose for at least a week. There is, however, always a late fermentation of lactose (7-24 days). They agglutinate to low titre with the Commonwealth Serum Laboratories' Flexner agglutinating serum. They are toxic for rabbits and guinea-pigs, causing death or a severe hyperæmia and softening of the large intestine. Rabbits immunized with one of these strains give serum which agglutinates all the others to titre. This organism appears to correspond with the type of dysentery bacilli described in Denmark by Sonne (11) and in Norway by Thjotta (12).

Type Strain.	M.R.C. Group.	Local Strains Corresponding.
Hiss and Russell ..	Y ..	4
Cable	W ..	7
Hughes	X ..	7
Whittington	Z ..	1
Elstree	V ..	4
..	WX ..	4
Lightbody	Not recognized ..	6

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Reviews.

PENSIONS.

Drs. Llewellyn J. Llewellyn and A. Bassett Jones have achieved a very memorable result in their exhaustive study of pensions and their evaluation.[1] To the considerable experience the authors have had of disease and injury both in industrial life and following on active service, they have added a remarkable amount of industrious study of the works and practice of all the most authoritative continental and American writers. The results of these have been incorporated in a treatise which is of very high value not only to those who have to deal with the after effects of war injuries and diseases, but also to those whose work brings them in contact with the difficult problems of the assessment of disability and the evaluation of damage resulting from accident or violence of any kind. Though written primarily from the point of view and in the attitude of mind of military medical referees, this book is also a mine of useful information to those concerned with the questions of workmen's compensation and industrial and accident compensation. While fully recognizing the difficulty of their task, the authors have attempted to allocate arithmetical equivalents to express the degree of disability caused by a vast number of injuries and combinations thereof. This is the first definite attempt of which we are aware by English authors, to systematize the principles which underlie the evaluation of disabilities or infirmities; it is of great value and interest, provided the obvious limitations of such an attempt be kept in mind. No hard and fast rules can ever, in the nature of things, cover all the economic and physiological factors in every individual case of injury or disease. The authors have been careful to insist on this very important fact in propounding their "guide Bareme" and have set forth very clearly the various factors which the referee must take into account in aiming at his decisions.

Llewellyn and Jones are already well known for their work on malingering and consequently the section of this present work devoted to that aspect of the subject is of great interest and of as great value as "the written word" is likely to be in such a difficult field.

Among other sections of this comprehensive work calling for special notice, the chapters dealing with the evaluation of the disability resulting from amputation and nerve and muscle lesions may be mentioned. Here there is much that is new being the result of a more extensive experience than was possible before the war.

The author's style is clear, in spite of occasional lapses into the flamboyant and the work is admirably indexed, which adds much to the value of what is essentially a work of reference.

[1] Pensions and the Principles of Their Evaluation, by Llewellyn J. Llewellyn, M.B., and A. Bassett Jones, M.B.; 1919. London: William Heinemann (Medical Books), Ltd.; Royal 8vo., pp. 702. Price, 30s. net.

THE PSYCHOLOGY OF PHANTASY.

Dr. Constance E. Long is the translator of Professor Jung's collected papers on analytical psychology[1] and, being a firm disciple of this Swiss writer, it is not surprising that his teaching is manifest throughout the pages of the book we have before us. At the same time, attention is given to the teaching of Freud and special use made of dream analysis in its practical applications. The book bears the title, "The Psychology of Phantasy," but in point of fact deals not so much with psychology as with a narration of direct experience and observation of the unconscious mind. It is also not an ordinary book, but a collection, more or less coherent, of papers on the unconscious and kindred subjects, written at different times.

As medical officer to the Education Board, Dr. Long had considerable experience among school children. It so comes about that most of her papers concern the mind of the child, thus: "Mental Conflicts in the Child," "Evidences of the Unconscious Mind in the Child," "Fear in the Child and the Authority Complex," "Unconscious Factors in Sex Education." They are well written, thoughtful papers and contain many truths useful alike to parent, teacher and physician. "Let him beware who thinks he fathoms the mind of the child. It is possible to do so, of course, to an extent, but only by taking the unconscious into serious consideration as well as the conscious. The child at the school age is already a complex being, full of memories, not only of facts, but also of the inventions of his imagination—dreams, phantasies and the like. For him the cardboard box was the ammunition waggon, or the big sofa a liner on the ocean. He has phastasies or imaginings about his father and his mother and his God, about his teachers and himself and he does not always by any means discriminate between fact and fancy. Then phastasies influence his conduct to a much greater extent than is generally supposed, none the less that they are unconscious productions and their meaning is hidden from him, just as it is from parent and teacher." In the same way as the child's dreams and phastasies give a clue to his behaviour, so the writer gives out, and more than once repeats, that it is an indispensable requisite for the analyst to have a thorough knowledge of his own unconscious mind; but how this desirable end is to be attained is not made clear. It is interesting to read what she writes about sex education and most will agree with her that, while sex instruction should be judiciously imparted in training colleges and universities, to open "the sealed book" to small children will not work. The child has so much of phantasy in his mind that his imaginings baffle us every time, even when we ourselves are perfectly clear in our own minds; moreover, further explanation often produces fresh error.

Reading books of this kind enlightens us as to the vastness of the field of inquiry. The unconscious contains all our memories from our earliest existence to the present. All that has happened to us continues to exist. And it is natural, not only that much controversy should range round the question of what the unconscious really is, but that different investigators should arrive at different interpretations as the results of their particular interests and psychology. We may instance the fact that the two great pioneers, Jung and Freud, so often quoted in these pages, have been led to formulations which are quite different in their ultimate conclusions. The delver in the unconscious, with his attention concentrated on any one idea, for example, that all symbols have a sexual significance, is bound to miss quite obvious meanings of another kind; it is also not impossible for him to refer things to the unconscious, which are no more unconscious than works of drawing or architecture.

The writer sums up the aims of the book in saying that she approaches the subject of phantasy solely from the standpoint of medical psychology and those who wish to enter upon the deep psychological problems which have earnestly engaged her attention, will read it with the care and study it requires and deserves.

[1] Collected Papers on the Psychology of Phantasy, by Dr. Constance E. Long; 1920. London: Baillière, Tindall & Cox; Demy 8vo., pp. 216. Price, 10s. 6d. net.

The Medical Journal of Australia.

SATURDAY, JUNE 4, 1921.

The Public Health Association.

Signs are not wanting that the general public is at last being awakened to the possibilities of preventive medicine in Australia. The Public Health Association of Australasia has made its *début* on the stage of public activities and political leaders of all parties have joined with more or less enthusiasm in wishing it success. Perhaps no organization has seized the imagination of the medical profession more than this Association. A vista of almost unlimited possibilities is opened up by a consideration of the problems of the public health, and the problems of the public health are the problems of preventive medicine with which every member of the profession is concerned. The Association, to be worthy of the purposes for which it stands, has great responsibilities to bear and complex problems of national importance to solve. It is yet to be seen how well or how badly these responsibilities will be discharged. The idea that public health is synonymous with sanitation lingers in the public mind and is not easily dispelled. The Association will have to consider problems far more cogent and more difficult of solution than those of mere sanitation. The reduction of maternal and infant mortality, the scientific eradication of infective diseases, the prevention of occupational and industrial diseases and the control of factory hygiene are a few of the questions which await earnest consideration. It is not to our credit that during the past year there were 18,183 cases of diphtheria notified in the Commonwealth, and that of the corresponding number of patients 805 died. Nor is it reassuring to know that almost 3,000 persons suffered from enteric fever, of whom 312 died. More than 3,000 citizens succumbed to the ravages of pulmonary tuberculosis. We believe that determined scientific endeavour is capable of reducing materially these figures. As regards the control of factory hygiene the question has been considered of sufficient importance in Great Britain to justify the formation of a special department to control the health of factory workers.

The Public Health Association may become an instrument of great power in the land. There are certain dangers, however, of a depreciation of that power. It is possible that the publicity which the Association is finding, may antagonize the main object of the organization, the improvement of the public health. The Association should remain a scientific body and for such a body quiet work, undisturbed by popular opinion or applause, is essential. It may be said that it is necessary to educate the public. But much as we agree that this is necessary, we consider that it is more important first to educate ourselves. The many problems of disease have not yet been solved and until a solution is forthcoming, it is futile to propose reforms. There is also the danger that the Association's independence may be shackled by departmental and political influences. Many of its most important members hold departmental positions which are more or less subject to the control of political bodies. There is the danger that unless the activities of the Association are carried out with the quietness of a scientific body into which no political considerations are allowed to enter, we may lose the independent judgement of those who by reason of their education and experience are best entitled to give an opinion on matters of public health. We are not satisfied that political parties are capable of approaching questions of public health without regard to political exigencies. The intentions of the individual politician may be good, but the requirements of party policy too often control and pervert his opinions. We are sufficiently jealous of the potential good of the Association to fear the introduction of anything redolent of political control.

We would suggest, therefore, that the early activities at least should be limited, as far as possible, to experts. By experts we do not mean medical men alone. The engineer, the physicist, the chemist, the geologist, the sanitary inspector, the architect, the nurse and others must all be consulted. But in the main the problems of preventive medicine are medical problems and it is the medical profession which must take the responsibility of their solution. Moreover, the work of the general practitioner is intimately bound up with the practice of preventive medicine.

He is the executive officer, so to speak, and without his help and enthusiastic co-operation any scheme of health reform must fail. We believe that the whole profession will readily work in unison with the Association, provided the scientific deliberations of that body are untrammelled. It appears to be the policy of the Association to co-ordinate certain agencies, public, quasi-public and private, which are directly or remotely concerned with health activities. It is difficult to see the wisdom of this policy which will probably result in converting the Association into an organization of similar character to those which it co-ordinates. The object of these bodies is largely public propaganda for the institution of various reforms, but rational conclusions attained in the quietness of scientific deliberation are necessary before legitimate propaganda can be used. "Science creeps from point to point," said the author of *Locksley Hall* and Adam Smith had much the same idea when he defined science as the great antidote to the poison of enthusiasm. Quietness is required for deliberation, enthusiasm for execution.

We plead earnestly for comparative secrecy of effort on the part of the Association. Advertisement in the public press, whether desired or not desired by members, will rob it of the support of the profession. In the councils of the Association departmental officers should be free to express opinions freely without fear of consequences, and this is impossible if members are required to deliver their utterances in the blaze of publicity. Publicity will tempt the interference of politics and politics often mean machinations and subterfuges at the expense of the public good. For similar reasons membership should not be open to politicians or any persons reasonably suspected of being controlled by political forces. Ministers of health should be ineligible for membership, since their very presence at meetings might rob departmental officers of their freedom of expression.

The Public Health Association of Australasia may prove of incalculable value to the community in the near future. If we fear failure or partial failure, it is because there is the possibility of its being strangled by extraneous influences. Should it preserve freedom of scientific thought and action, its success will be assured.

THE ÆTIOLOGY OF HYDROCEPHALUS.

In the past the chief obstacle in the way of successful treatment of hydrocephalus has been our ignorance of its exact pathogenesis. While able to exploit the morbid anatomy of this distressing condition, we have been unable to fathom the mystery of its mechanism of production. The reason is probably to be found in the cautiousness with which all intra-cranial conditions during life have been approached. While surgeons have explored freely almost every other part of the body, the base of the brain has remained more or less inviolate by reason of the grave danger and unsatisfactory results of unlimited intra-cranial surgery. The honour of flooding the pathogenesis and treatment of hydrocephalus with new light has fallen to a member of the department of surgery of the Johns Hopkins Hospital. The brilliance of Dr. Walter E. Dandy's investigations is only rivalled by the courage which sustained him during their elaboration. Having satisfied himself of the truth of certain observations on the *cadaver*, he boldly applied the new principles to the treatment of the living subject, with sufficient success to justify the hope that a new period in intra-cranial surgery has begun.

Congenital hydrocephalus has been divided into two classes, the "obstructive" and the "communicating." Obstructive hydrocephalus was thought as the result of *post mortem* research to be caused by obstruction of the foramen of Magendie in the roof of the fourth ventricle. As is well known to every student, cerebro-spinal fluid is secreted by the chorioid plexuses in the ventricular system of the brain. It passes from the lateral ventricles through each foramen of Munro to the third ventricle, and thence along the aqueduct of Sylvius to the fourth. It then makes its escape by the foramen of Magendie in the roof of the fourth ventricle and by the two foramina of Luschka in the pial roof at the extremity of each lateral recess, into the large cisterns of the subarachnoid space. The chief of these cisterns are the *cisterna magna* (*cerebello-medullaris*), the *cisterna chiasmatis* and the *cisterna inter-peduncularis*. The fluid circulates in these cisterns and is then carried by numerous branching channels over the surface of the cerebral hemispheres. At this final destination it is absorbed into the blood stream to the extent of four-fifths of its volume. The remaining fifth is absorbed in the cisterns at the base of the brain. Dr. Dandy showed that obstructive hydrocephalus was caused in every two cases out of three by occlusion of the Sylvian aqueduct in some part of its course and that in the remaining one the obstruction was in the roof of the fourth ventricle. This latter had previously been considered the most common site. He used several methods to demonstrate this and other facts. One method was to inject a small quantity of colouring matter (indigo-carmine) into a lateral ventricle and to perform a lumbar puncture operation half an hour later. If marked colouration of the fluid was obtained, it was obvious that there was no obstructive hydrocephalus, since the ventricles communicated freely with the subarachoid space. On the other hand, the hydrocephalus was

probably of the "communicating" type. If the colouration did not appear, there was certainly obstruction either within the ventricular system proper or at the foramina in the roof of the fourth ventricle.

The second method enabled this obstruction to be accurately localized. Cerebro-spinal fluid was aspirated from one lateral ventricle and replaced by air. To do this a needle was passed through the anterior fontanelle or a wide suture in hydrocephalic infants and through a small trephine opening in the case of adults. By altering the position of the head the air could be made to pass through the entire ventricular system except in the case of obstructive hydrocephalus when it stopped at the site of obstruction. A skiagram showed very distinctly the course of the air and the point of obstruction could be accurately localized in this way. Dandy has called this means of diagnosis "ventriculography." He has also used the same principle in another way—by the injection of air into the spinal theca after the removal of fluid by lumbar puncture. If there is no obstruction—no communicating hydrocephalus—the cisternæ will fill with air and air will pass over the network of sulci on the cerebral hemispheres.

Dr. Dandy has recently published an interesting paper on the subject of communicating hydrocephalus,[1] in which he clears up many of the problems associated with that type of the disease. He proved that in the cases which came within his recent experience the cause of communicating hydrocephalus was an obstruction in one of the cisternæ. He demonstrated this by injecting *post mortem* a suspension of India ink into the spinal theca. The ink passed up the spinal cord in the subarachnoid space and then along the cisternæ as far as the obstruction which was frequently found to be in the *cisterna chiasmatis* or the *cisterna interpenduncularis*. The obstruction prevented it from passing along the ramifications of the sulci on the cerebral hemispheres and these latter remained unstained. In some instances the ink was able to pass through the dilated foramina of Luschka and Magendie into the enormously distended ventricles. The end results in this and in the obstructive types of the disease were the same. The cerebro-spinal fluid in both instances was unable to reach the cerebral sulci whence it could be absorbed by a process of osmosis into the veins of the blood vascular system. In the living person the obstruction was also demonstrated by "cerebral pneumography." Air injected into the spinal theca was found to stop at the site of obstruction in the cisternæ where it could be seen sharply outlined in a skiagram. The author was further able to produce hydrocephalus experimentally in dogs by surrounding the midbrain with a piece of gauze saturated with iodine, thereby completely blocking the mesencephalic cisterna. He also showed that in certain cases of hydrocephalus the obstruction may be neither in the ventricles nor in the large cisternæ. It may be in any or all of the large branches which carry the fluid to the cerebral sulci. Obstruction of a few of these large branches explains the mild degrees of hydrocephalus occasionally met with clinically and it also explains the recovery which may ensue owing to the deviation of the fluid along the remaining channels to the cerebral network of the subarachnoid space.

The cause of communicating hydrocephalus would, on Dr. Dandy's reasoning, appear to be adhesions at the base of the brain which occlude the cisternæ, and these adhesions would seem to be due to a pre-existent meningitis. He suggests that in some cases there is a congenital mal-development of the cisternæ or their larger branches. It is impossible either to remove the adhesions or to replace what Nature has failed to provide. The author, who apparently has an admirable gift of imagination, has recommended that the chorioid plexuses of both lateral ventricles be excised so as to reduce the output of cerebro-spinal fluid. Four-fifths of the entire fluid are secreted by these two glands. He actually performed this operation on one patient who was alive and well ten months afterwards. For obstructive hydrocephalus he has operated according to need, fashioning a new aperture in the roof of the fourth ventricle or repairing the channel of the aqueduct of Sylvius. In a little while we may be able to assess the value of these remarkable observations more truly than is possible to-day, but the remarkable originality of the methods and the success attending them in the inventor's hands raise the hope that they may revolutionize both the pathology and treatment of hydrocephaly. Moreover what has been applied to one pathological entity may be applicable to others and it is possible that cerebral new growths and abscesses may be capable of equally intimate localization.

[1] *Johns Hopkins Hospital Bulletin*, March, 1921.

THE NICHOLS PRIZE.

The Royal Society of Medicine announces that in accordance with the will of the late Robert Thomas Nichols, they are offering a prize of £250 for the most valuable contribution toward the discovery of the causes and the prevention of death in childbirth from septicæmia. Essays submitted for the prize must be in the hands of the Secretary of the Royal Society of Medicine not later than June 30, 1924. The essays must be typewritten or printed in English and must be accompanied by the name and address of the author. The envelope must be marked "Nichols Prize." The competition is open to any British subject. Further particulars will be found in the advertisement published in our issue of May 21, 1921. The prize will be offered every three years.

We have been asked to state that a meeting will be held in the British Medical Association Building, 30-34 Elizabeth Street, Sydney, at 8 p.m. on Thursday, June 9, 1921, with the object of forming a syndicate on a co-operative basis to provide suitable accommodation for members of the medical, dental and allied professions practising in the city of Sydney. Those interested in the scheme are invited by the temporary Honorary Secretary, Mr. J. Houghton Bradley, "Wyoming," Macquarie Street, Sydney, to attend. A letter on the subject will be found in our correspondence columns.

The next meeting of the Melbourne Pædiatric Society will be held on Wednesday, June 8, 1921, when Professor W. E. Agar will deliver a lecture on "Heredity."

Abstracts from Current Medical Literature.

MEDICINE.

(204) Vincent's Angina.

The prevalence, manifestations, bacteriology and treatment of infections by the spirillum of Vincent are discussed by F. D. Reckford and M. C. Baker (*Journ. Amer. Med. Assoc.*, December 11, 1920). The authors point out that the importance of these infections lies in the fact that the resulting conditions are not infrequently mistaken for diphtheria. From the experience of the recent war it appeared that the incidence of infection was greatly increased under conditions of military life. In a series of 56 cases analysed, it was found that oral sepsis, neglect of the hygiene of the mouth, insufficient or improper food and debilitating conditions in general were factors of ætiological importance. Since the discovery of the cause of the disease in 1898 there has been considerable discussion regarding the relationship of the fusiform bacillus and the accompanying spirillum, which are constantly present. The writers accept the conclusions of Tunnicliff and Wright, that the spirillum is in reality an evolutionary form of the bacillus. It is stated that in the majority of cases a diagnosis may be made from the clinical appearances alone. The presence of co-existing diphtheria or syphilis should not be lost sight of. The characteristic clinical features of Vincent's angina are the slight constitutional disturbance, pain on swallowing, unilateral affection of the throat, marked enlargement and tenderness of the submaxillary lymphatic glands and the presence of the organism on examination of fresh films. Treatment consists of the elimination of oral sepsis, together with the local application of a 10% solution of arsphenamin in glycerin.

(205) Alkali Reserve in Epidemic Influenza and Broncho-Pneumonia.

David S. Hachen and Raphael Isaacs (*Journ. Amer. Med. Assoc.*, December 11, 1920) have recorded observations on the relation between the clinical course of cases of influenza and broncho-pneumonia and the prognostic significance of diminution of the alkali reserve of the blood. In general, it was found that in cases in which the disease was progressing towards a fatal termination, the alkali reserve of the blood showed a constant diminution. The method of Van Slyke was used to determine the bicarbonate content of the blood plasma in terms of the percentage by volume of carbon dioxide. In a series of 46 determinations made in the case of 21 patients in different stages of influenza and broncho-pneumonia, it was found that in cases where the alkali reserve fell below 46, in spite of alkali therapy by mouth, a fatal result ensued. A favourable termination followed in cases where the alkali reserve remained at 53 and upwards. This feature is regarded as significant, in consideration of the hypothesis that reduction of alkali may be associated with diminished oxygen-carrying power of hæmoglobin. No definite relation was noticed between the alkalinity of the blood and the degree of cyanosis and respiration rate in the cases observed. The authors regard the estimation of blood alkalinity as of definite prognostic value and as an indication for treatment, although the depletion of alkali reserve did not appear to be much influenced by the administration of alkali by mouth.

(206) Dietary Treatment of Constipation.

Roy Upham considers that the part played by dietetics in the treatment of constipation, while most interesting, is subsidiary (*New York Med. Journ.*, July 10, 1920). An insufficient intake of water is the factor in a large number of cases. Few people make a practice of drinking water other than at meal times, women being the worst offenders. Neglecting the call of nature should never be allowed, as the rectum is a very delicate structure, and failure to respond is the cause of the majority of cases of constipation. The great point to be borne in mind in the treatment of constipation is that these patients, because of intestinal toxæmia, are constantly reducing the amount of their food, until there is not sufficient intake to stimulate the intestinal motility. The author advocates the use of petroleum oil. As the oil often causes the patient to lose control of the sphincter, it may be combined with grape juice in equal parts, emulsified by mucilage of acacia. The taste of the oil is disguised by this expedient. Honey is laxative and molasses an effective remedy. There are numerous cereals and laxative biscuits. One of the most effective breakfast cereals is made from flax seed. Their action is similar to that of agar-agar. Wheat bran serves to supply the bulk, but does not hold the moisture as agar-agar does. The aim is to eliminate entirely the use of drugs, with possibly the exception of various liver stimulants, such as ox gall, sodium succinate and acid sodium oleate, which are effective through stimulation of the liver and not as direct laxatives. The use of oil injected into the rectum the last thing at night and held until morning is most effective, particularly in the class of cases due to dyschezia of the rectal type of constipation. Persons suffering from constipation should not take purée soups, rice, sago, farina, cream of wheat, cheese, chocolate, cocoa, claret or red wines. Before going to bed the patient is instructed to exercise, using the abdominal exercises of the United States Army, or the shot bag principle of exercise. The patient must arise at the same time every day and take his meals at the same time. Extremes of temperature, either hot or cold, are extremely valuable as stimulants to bowel motility. To a patient who has difficulty in consuming a sufficient amount of food, the caloric method of feeding is applicable. To patients who are somewhat stubborn the use of the rectal dilator, inserted when they begin to dress in the morning and left in the rectum until a desire for bowel movement is induced, is usually very effective. No case of chronic constipation is diagnosed or should be treated until a thorough proctological examination has been made. Constipation due to spasmodic colitis, with abnormal spasmodic contractions throughout the large intestine, is usually accompanied by an increase in the production of mucus and is known as mucous colitis. Formerly this condition was considered to be an irritative one and was handled by an extremely bland diet, no irritating foods being given. The bland diet has now been practically discarded and this type of spasmodic colitis is treated with the diet outlined by the author. The author's conclusions are: Constipation is a preventible disease. The pronounced causal factors are carelessness and laziness. Plenty of water should be drunk to supply the necessities of the body. There should be absolute regularity in the time of the stool. Dietetic principles should be applied with intelligence and the ætiological causes thoroughly understood. Cathartics will not cure constipation, but are sure to aggravate the condition.

(207) Epileptic Seizures.

R. MacRobert and L. Feinier have published the results of their investigation of 165 cases of cerebral tumour carried out for the purpose of ascertaining in what proportion of these cases generalized epileptic seizures occurred (*Journ. Amer. Med. Assoc.*, February 19, 1921). Of the 165 patients, all of whom were operated upon at the Neurological Institute of New York during the past year, generalized epileptic seizures had only occurred in 4; in all 4 cases the tumour was in the temporo-sphenoidal lobe. As an explanation the authors suggest that the slow growth of the tumour gradually causes partial occlusion of the Sylvian branch of the middle cerebral arteries, whose walls are known to be deficient in elastic tissue. This partial occlusion would cause anæmia of a large area of the cortex with resultant cortical instability, a well recognized cause of excitement and irritability.

(208) Nephritis in Childhood.

R. James examined 67 children who had suffered from acute nephritis between the ages of two and twelve to determine how many recovered entirely and in how many chronic nephritis developed and to arrive at the ultimate prognosis in the case of the latter group of patients. His results are published in the *Journal of the American Medical Association*, February 19, 1921. He found that in 13.3% chronic nephritis developed, while the remainder recovered completely. In the chronic cases there was no definite guide as to the prognosis, which should be based on laboratory findings and the functional capacity of the child. The prognosis in acute exudative nephritis was found to be less favourable than in the acute hæmorrhagic type.

NEUROLOGY.

(209) Decerebrate Rigidity in Man.

S. A. Kinnier Wilson (*Brain*, Vol. XLIII., Part 3, 1920) draws a comparison between the experimental decerebrate rigidity of animals (following transection of the brain stem at the mesencephalon, which is equivalent to removal of the cerebral hemispheres), and cases in man "in which there is evidence of withdrawal of cortical control in the form of unconsciousness or semi-consciousness, the result commonly of cerebral hæmorrhage or of meningeal inflammation or from the effect of certain intra-cranial tumours; also for that matter of hysteria. Coupled with this impairment of consciousness has been the appearance of tonic rigidity of trunk and limbs, minutely resembling decerebrate rigidity, to which frequent exacerbations in the form of tonic or postural fits, accentuating and aggravating the background of tonic posture, are superadded." The first five cases described comprise a tumour of the frontal lobe, a tumour of the mesencephalon, a case of general suppurative meningitis, a case of cerebral hæmorrhage bursting into the lateral ventricles and a case of tuberculous meningitis. In each the decerebrate posture was reproduced with the exactness of a physiological experiment, in each the onset of tonic fits merely accentuated the already existing posture, showing that tonic fits are in reality attacks of decerebration, and in each the absence of clonic element was of much significance. There follows an account of cases of decerebrate rigidity without tonic fits and cases of tonic fits without persisting decerebrate rigidity and then cases of decerebrate rigidity in conscious life are described. It is pointed out that tonic or "cerebellar" fits may occur, in which the decerebrate posture is temporarily assumed, and attention is drawn to the position in hysteria of opisthotonos with extension of the legs and extension of the legs and arms, as a well-recognized phenomenon. Finally, there are cases which present a unilateral or fragmentary decerebrate attitude in one limb only. Not only may the decerebrate attitude of the head in certain conditions be so explained, but the extreme pronation of the hand seen in athetosis or chorea may be such a fragment. The writer has drawn upon the classical work of Hughlings Jackson, Sherrington, Graham Brown and others in concluding that the mesencephalon is chiefly responsible for the maintenance of the decerebrate posture and that integrity of the red nucleus and its connexions is of special importance.

(210) The Symptom-Complexes of Lethargic Encephalitis.

F. M. R. Walshe (*Brain*, Vol. XLIII., Part 3) discusses the protean manifestations and remarkable clinical diversity of lethargic encephalitis. He suggests that the numerous schemes of classification and description, though inevitable in the early and growing stages of knowledge of so polymorphic a disease, are in fact tending to confuse rather than to lend precision to our conceptions, since almost every case presents either simultaneously or at some phase the features of several "clinical" types. The example of "myoclonic encephalitis" is discussed to demonstrate the misleading results of a purely symptomatic basis of classification and description. Description upon an anatomical basis, that is, by the use of the focal nervous signs for the purpose of defining types, would obviate confusion and at least ensure a uniform terminology. For example, lethargy may exist with signs of a lesion of the cortex, basal ganglia, mid-brain, cerebellum, lower motor neurones or spinal nerve roots. It seems probable that the "choreiform" manifestations, the Jacksonian fits and the muscular contractions collectively grouped by various writers as "myoclonic," are in fact the expressions of an irritative or exciting action of the virus of the disease upon neurones of the three physiological levels (Jackson) and that such symptoms may be localized according to the same principles which hold in the case of negative or paralytic symptoms. From these considerations this striking feature emerges that negative or paralytic symptoms indicate a selective action on the cells of the basal ganglia and certain cranial nerves. On the other hand, in its irritative or exciting effect, the virus acts equally on any and every part of the nervous system, from cerebral hemispheres to spinal roots; hence the polymorphic character of cases characterized by what may be called irritative symptoms. Possibly the virus is a complex one, containing more than one active component.

(211) Concussion of the Brain.

H. Duret (*Revue Neurologique*, No. 9, 1920), from a general study of the circumstances which determine the appearance of concussion (*commotion*) in cases of cranial trauma, arrives at the following conclusions. Among cases of head injury there are some in which the cranium alone sustains the whole force of the blow and which are not associated with concussion. It is a curious fact that this is chiefly observed in cases of compound comminuted fracture. Under other circumstances, on the contrary, the cranium proves wholly resistive or almost so (there may be a linear fracture of the base) and the brain sustains the blow. In such a case there are signs of concussion and cerebral lesions may or may not be found. Next, in a certain number of cases of concussion with cranium intact death occurs without any apparent lesion of the brain substance being discovered or at any rate with insufficient cause to explain death. Sometimes in such cases it would appear that more precise histological examination by approved new methods of the mesencephalon and bulb might disclose lesions; accordingly definite pronouncement on this point cannot be made. In these fatal cases some alteration in the respiratory, vagal or vasomotor centres, which are vital centres of the greatest physiological importance, might be expected. Concussion pure and simple as a cause of death seems to be exceedingly rare. Finally, a certain number of cases of cranial injury, the result of apparently moderate violence, are accompanied by grave and rapidly fatal intra-cerebral hæmorrhages. In such cases the primary phenomena of concussion may be absent.

(212) Mental Hygiene.

E. Farquhar Buzzard (*Proc. Roy. Soc. Med.*, November, 1920) writes that the growth of mental hygiene should be promoted, in the first place, by no longer misnaming mental disorders as "nervous." It is time to be courageous and to speak of hospitals or clinics as institutions for "minor mental disorders," in preference to "functional nervous disorders." It is also necessary to dispel the confusion between ethical and medical principles as they affect health. Elementary principles of psycho-pathology and psycho-therapy should be taught to students, so that when they become general practitioners they may take a prominent part in maintaining the mental health of individuals. Since these subjects are more important than some that the student is called upon to know, they should be introduced into the syllabus for examinations and questions should be set upon them. Finally, general recognition must be obtained for the multiplicity of factors concerned in producing mental as well as other disorders, due prominence should be given to fatigue as a factor in psycho-pathology and to rest in psycho-therapy and education in thinking should be encouraged as an important preventive measure.

(213) Parkinsonian Syndromes from Mesencephalic Lesions.

M. J. Tinel (*Revue Neurologique*, July, 1920) insists upon two important points concerning Parkinsonian syndromes associated with mesencephalic lesions. First, there is a dissociation between the slow and the rapid movements. In certain cases there is a contrast between the difficulty of executing slow movements and the ease of executing rapid movements. Of this he has observed two good examples. One of his patients, only able to walk very slowly and supported on both sides, was capable at certain times of taking long strides. The other, able to walk with great difficulty on a level surface, could ascend stairs easily and quickly and could even go up two steps at a time. This is a paradox, having nothing in common with festination and it is difficult to explain. This phenomenon was observed by Frederick Tilney in 1911, who spoke of it as "metadromic progression." Secondly, there is a difference between the dynamic and the static force, one which has been noted since the time of Trousseau and has been particularly studied by Dyleff. But Tinel thinks that this has no Parkinsonian or even pathological character, but is simply a normal phenomenon.

British Medical Association News.

SCIENTIFIC.

A meeting of the Victorian Branch was held at the Medical Society Hall, East Melbourne, on April 6, 1921, Dr. L. S. Latham in the chair.

Dr. R. Hamilton Fairley read a joint paper on dysenteric infections by himself and Mr. H. R. Dew (see page 453).

Dr. S. W. Patterson read a joint paper on epidemic diarrhœa by himself and Miss F. E. Williams (see page 460).

Dr. R. R. Stawell read a paper on the treatment of dysenteric affections. Owing to want of space the publication of this article has been deferred.

The papers were illustrated with lantern slides and a number of interesting macroscopical and microscopical preparations were set out in adjoining rooms.

Mr. H. R. Dew reviewed the surgical complications of amœbic and bacillary dysentery as they had come under his observation in Egypt and Palestine during the recent war. Only one complication of the bacillary infection could be described as of a surgical nature. It was an arthritis which affected the larger joints, usually the knee. It was often monarticular, but the speaker recollected two instances in which more than one joint was involved. The arthritis was characterized by a painful effusion into the joint. It generally supervened in the third week of the disease. Its tendency was to chronicity, with consequent stretching of ligamentous structures and atrophy of muscles; contractures ensued in the absence of due care to forestall them. The fluid obtained by exploration of such a joint was always sterile and the condition subsided after such measures as tapping, the application of Scott's dressing and strapping.

Mr. Dew stated that he had never met with perforation of the bowel in the course of bacillary dysentery.

The most important surgical feature of amœbic dysentery was, of course, hepatic abscess, but he wished to emphasize the fact that amœbic hepatitis, unaccompanied by suppuration, gave rise to a clinical condition which was not always readily distinguished from liver abscess. In both conditions the liver was enlarged and fever and leucocytosis were present, but the characteristic feature of amœbic hepatitis was the improvement which attended a few days' administration of emetine. Liver abscesses following amœbic infection were more frequently multiple than single; the common arrangement was one large cavity with several outlying smaller foci. It was important to remember that a liver abscess might be the primary and only manifestation of amœbiasis. In other words, there might have been no antecedent dysentery. White races were very prone to this type of amœbic infection. In all such instances, however, *Entamœba histolytica* or its cysts would be found in the stools.

The rise in the leucocytes to 40,000 per c.mm. or thereabouts was, in association with the enlarged liver, very constant in amœbic liver abscess; it was to be noted that such a degree of leucocytosis was unusual in protozoal infections.

Mr. Dew said that sooner or later in the course of hepatic suppuration, fluid appeared in the right pleural cavity. In the diagnosis of amœbic abscess, exploration of the liver by needles was of little value, as the characteristic necrotic material was of such consistence that it would rarely pass through an exploring needle or trochar. The abscess, usually situated in the posterior superior quadrant of the right lobe of the liver, was best dealt with by transpleural drainage through large tubes. Rogers had advocated irrigation of the cavity of the abscess with quinine hydrochloride in 10% solution. This was undoubtedly a very useful procedure. Too much care could not be taken to prevent secondary infection, as such an event was disastrous and was always accompanied by a very high mortality rate.

Mr. Dew added some remarks on perforation of the colon in amœbic dysentery. In contrast with bacillary dysentery, it was a not uncommon catastrophe and resulted either from deep erosion in a single ulcer or from gangrenous colitis affecting a varying length of the bowel. He recollected two patients in whom the bowel for a length of 90 to 120 cm. was converted into a black, sloughing mass. The more usual perforation of a single ulcer did not admit of repair by surgical means as the surrounding bowel wall was so thickened and indurated that it was impossible to work with it successfully. Perforation of the bowel in amœbic dysentery was invariably fatal. Stricture sometimes developed in chronic amœbiasis, but never occurred as the outcome of bacillary dysentery.

Dr. H. Douglas Stephens said that as he was unable to be present in time to hear the papers read, he felt at some disadvantage in making his remarks relevant to those of the previous speakers. He hoped, however, that some observations on infantile diarrhœa would be appropriate.

In the diarrhœas of infancy they had to consider (*i.*) the nutritional or dyspeptic type, dependent upon feeding which was unsuitable in quantity or quality and (*ii.*) the infective type which was of bacillary origin, and might conceivably be amœbic, although he had not met with an instance of amœbic infection in infancy.

Very numerous bacteriological examinations of the motions in the infective type of infantile diarrhœa had shown that it was not a disorder that could be attributed, like enteric fever, to the activities of any one special organism. Variety among the organisms present had characterized all bacteriological investigations, but the clinical picture was often suggestive as to the infecting organism in any individual case. Thus the very severe infections had commonly been found to be due to the *B. dysenteriæ shiga*, whereas infection with *B. dysenteriæ flexner*, although it gave rise to frequent motions which were dysenteric in the sense that they contained blood and mucous, generally resulted in somewhat less severe illness. Then there were the Gærtner type infections which showed a tendency to chronicity; Morgan had identified his No. 1 bacillus with a type of diarrhœa in which blood in the stools was very infrequent.

The organisms named were all non-fermenters of lactose. The greater part of the bacteriological work in summer diarrhœa had centred round this group, but it was possible that some of the lactose fermenters also played a part. Indeed, great prominence had been given by some writers to the "gas bacillus" by which he understood the *B. aerogenes capsulatus*.

Dr. Stephens said that he did not propose to include the treatment of the nutritional type of diarrhœa within the scope of his remarks except to mention that it differed fundamentally from the infective class in that modifications of milk or skimmed milk might be given early under certain conditions with advantage. In infective infantile diarrhœa the ideal treatment at the outset was the prompt administration of an appropriate serum, which must be used early and in large doses. He had used the Commonwealth Serum frequently, but the results obtained had not fulfilled his expectations. Probably when a larger number of locally isolated dysenteric strains were utilized in the production of the serum it would prove more efficacious. He hoped for a locally made polyvalent serum which would be as useful as diphtheria antitoxin. After the exhibition of serum the treatment might be considered in the three stages of (*i.*) starvation, (*ii.*) carbohydrate diet, (*iii.*) the gradual addition of milk.

With reference to the second stage, Dr. Stephens said that he had occasionally found that the low protein, high carbo-hydrate diet did not meet the case and that reversion to a relatively high protein diet was followed by improvement. In this situation he was often at a loss as milk or skimmed milk was not generally admissible, although latterly he had been using much more boiled skimmed milk in treatment than heretofore. In America "albumin milk" was largely used and although it was somewhat difficult to prepare, the results attending it seemed very good.

A high protein diet was difficult to arrange and one was often forced back upon egg-white, beef-juice, plasmon and possibly whey. The first of these could not be taken by some few infants by reason of the anaphylactic phenomena which it precipitated. It had occurred to him that the class of case to which he had referred as being benefited by high protein, low carbo-hydrate diet might owe this special feature to an infection with the "gas bacillus," but he could not advance any proof of the idea.

Dr. Stephens expressed a preference for castor oil as the initial drug in promoting elimination; it might be followed by sulphates or calomel; he favoured the former. The sulphates of sodium or magnesia had no injurious action on the mucous membrane of the bowel, but it had been shown that calomel, administered in ordinary doses to healthy babies caused the appearance of blood in microscopical quantities in the motions. If calomel were used, it should be in fractional doses at specified intervals. Vomiting on the part of the infant frequently precluded the use of castor oil. In the early stages of diarrhœa and vomiting, lavage of stomach and bowel was often followed by rapid subsidence of the symptoms; he withheld cathartics as a rule from infants who were not seen until after the lapse of 48 hours and who were passing frequent evacuations containing no fæces.

Dr. Stephens said that dehydration was an indication for the injection of saline solution subcutaneously. Although it had been recommended that glucose should be added to the saline, he had seen sloughing follow the subcutaneous injection of saline solutions containing glucose in babies in low condition. In dealing with infants of under twelve months he did not care to continue exclusive carbo-hydrate feeding for longer than four or five days, and while it was formerly his practice to starve for long periods, he now endeavoured to commence feeding after the lapse of three or four days.

In conclusion, Dr. Stephens commented upon the facility with which many infants with chronic diarrhœa tolerated fruit juices. So far from aggravating the condition, fruit juice very often appeared to play a material part in effecting its improvement.

Dr. William Ostermeyer said that he was afraid that the emphasis which had been laid on the serum treatment of dysentery indicated another instance of the extraordinary monopoly which one method of treatment sometimes assumed. He wished to lay stress on the non-serum treatment, an aspect which appeared to him to have been overlooked in the discussion.

In the dysenteries of amœbic infection and bilharziosis the specific remedies of emetine and tartar emetic respectively were available. No doubt it was because of the lack of any similar specific in bacillary dysentery that sera had been requisitioned. Even though there was no specific drug, he could not recall one case of diarrhœa which he had not overcome with medication. After all, as Sir James Mackenzie had expressed it, clinical medicine was a science and in the particular affection under discussion, failure was very often due to lack of resource. Something more than the routine use of bismuth and opium was necessary. The various remedies ought to be used in certain sequences the value of which had been learned by experience.

Dr. Ostermeyer quoted an instance of protracted diarrhœa, which failed to be benefited by various drugs and eventually cleared up completely under salicylate of bismuth. As he had remarked, it was largely a matter of resource and the same observation was applicable to diet in the management of diarrhœal disorders. There was no rule of thumb in this respect any more than applied in the use of drugs.

Sodium sulphate in dysenteric affections was now hailed as a revelation, but he ventured to say that every rational physician had used it all his life. The present exalted position of sodium sulphate was but a re-discovery of a trite procedure which should never have been forgotten.

He was somewhat surprised at the objection laid against calomel by Dr. Stephens. Might not the hæmorrhages from the mucous membrane to which Dr. Stephens had referred, be regarded as a therapeutic bleeding? Rather than be influenced by the minute hæmorrhages which had been attributed to calomel, he preferred to act on its clinically ascertained virtues. If the drug were unsuitable in any individual case, he changed it.

Great importance had been attached to the early use of serum if it were to be efficacious, but possibly other measures would be equally successful if they were given the advantage of the same early start.

In conclusion Dr. Ostermeyer said that he had no wish to belittle scientific work. He was indeed conscious of the moral abandon which he might appear to some to have displayed, but he considered that to treat dysenteric affections rationally by a proper sequence of well-known therapeutic agents required more skill than the use of a ready-made form of treatment such as serum therapy.

Dr. Reginald Webster said that he had followed the papers of Drs. Patterson and Fairley with very great interest and that he had a very keen appreciation of the large amount of painstaking work on which they were based. Dr. Patterson's observations during the recent summer indicated that the Flexner group of dysentery bacilli had prevailed in the metropolitan area. Those findings were in accord with his own experience in infantile diarrhœa. He had not met with a single "Shiga" strain, all the dysenteric types he had recovered belonging to the mannite-fermenting Flexner-Y group.

Perhaps the impression he had gained was not altogether correct, but he had understood Dr. Patterson to indicate that the greater number of cases of infantile diarrhœa were infective in nature. Such was not his own conception of the dominating factor in infantile diarrhœas and he was of opinion that the larger number were essentially dyspeptic in origin and that only the minority were dysenteric in the bacteriological sense.

Dr. Fairley had given a detailed description of the *post mortem* appearances in acute bacillary dysentery and had indicated the class which was to be interpreted as evidence of systemic poisoning.

Some two years ago he (Dr. Webster) had studied summer diarrhœa from the point of view of a possible bacteriæmia in severe cases. In a series of thirty blood cultures he had recovered organisms of the non-lactose-fermenting group in six. He had notes also of two cases of acute meningitis in which he had implicated the *B. coli* and *B. gærtner* respectively.

Dr. Webster commented upon the difference in intensity between the bowel lesions in summer diarrhœa as observed by himself in a now considerable number of *post mortem* examinations and as they appeared in the description given by Dr. Fairley of the morbid anatomy of bacillary dysentery. He had never seen a "plum coloured" bowel in an infant and only exceptionally had he met with a colon in which the lesions approached the grey necrosis observed in tropical bacillary dysentery.

The usual picture in summer diarrhœa, by which he meant the infective type, was intense hyperæmia, œdema and submucous hæmorrhage. Individual lymphoid follicles were often picked out and exhibited perhaps a very superficial destruction which scarcely amounted to ulceration.

A common mode of death in protracted cases was bronchopneumonia and a complication of great frequency was a bacillary infection of the urinary tract. Female infants were more prone to the latter. Within the last six months autopsies at the Children's Hospital had disclosed in three instances multiple foci of suppuration in the kidneys as the culmination of urinary tract infection. In view of the infective material which was discharged round the genitalia in diarrhœal babies, the passage of a catheter should not be ordered without due consideration.

Dr. L. S. Latham expressed the indebtedness of the meeting to the readers of the papers. The immense amount of work involved in the preparation of the evening's instructive demonstration must have been obvious to all; it was very gratifying to the profession as a whole to know that such active and intensive research work was being pursued in their midst at the Walter and Eliza Hall Institute.

The word "dysentery" should no longer be used as a symptomatic term, but should be restricted to designate a specific infectious disease. Emerging out of all the scientific work was the real application to treatment of specific serum therapy and it had taken the war to demonstrate its remarkable efficiency in acute bacillary dysentery.

Both Dr. Stawell and Dr. Fairley had mentioned the wonderful work of Dr. C. J. Martin, whose zeal for pushing up laboratories as close as possible to the front line greatly facilitated that discrimination between the different types of dysentery which was indispensable for the institution of proper treatment.

Dr. Latham said that while abroad he personally had had little to do with acute dysentery, but had seen a great deal

of the extremely protracted post-dysenteric debility for which it was so difficult to do anything. This stage of the disease could be eliminated by early laboratory diagnosis and prompt application of the treatment thereby indicated.

Drs. Fairley and Patterson had impressed upon them the necessity for early submission of specimens. He hoped that such necessity would obtain general recognition because of the better results in treatment which would follow.

Dr. S. W. Patterson, in reply, added a brief statement regarding rapid diagnosis by microscopical examination of stools. It was usually possible in acute dysentery to gain by an immediate microscopical examination a fair idea of the organisms likely to be recovered subsequently. Such an examination was always worth while, because serum treatment had to be instituted at once, whereas two or three days must elapse before the isolation of the organism could be completed.

He agreed with Dr. Webster regarding the nutritional character of many of the diarrhœas of infancy. In a series of bacteriological investigations of cases placed clinically in this group he had obtained a very low proportion of dysenteric organisms.

In the preparation of his paper the one difficulty he had foreseen was that he might insist too much on the pathological side of the question. It remained for the physician to utilize the results of the laboratory work. If the investigations they had conducted proved of value to practising physicians, he would have accomplished his object.

Dr. N. Hamilton Fairley referred to the remarks made by Dr. Webster relative to infantile diarrhœa. Unless it were that infants died at a much earlier stage in the course of the infection, the changes in the colon would appear to differ considerably from those characteristic of fatal bacillary dysentery in the adult, especially *B. shiga*.

The tendency to systemic invasion was very rare in bacillary dysentery and the pathological process consisted of a local multiplication of the organisms in the mucosa of the bowel and a diffusion of toxins therefrom. It was quite exceptional to meet with systemic bacteriæmia and in only one instance had Mr. Dew and he succeeded in detecting the organism extra-colonically—a *Flexner-Y* strain isolated from the spleen *post mortem*.

With reference to Dr. Ostermeyer's remarks on drug therapy in bacillary dysentery, Dr. Fairley pointed out that all the really specific drugs were directed against protozoal infections, such as syphilis, malaria, amœbic dysentery, cutaneous Leishmaniasis or the helminthic infections, such as bilharziosis and anchylostomiasis. With the possible exception of rheumatism there was no specific drug for any of the bacterial infections and it seemed more reasonable, therefore, to develope the treatment of bacillary dysentery by anti-sera. Immune sera constituted the only specific remedies available against bacterial infections.

Notices.

The Scientific Committee of the Victorian Branch announces the following papers to be read at meetings of the Branch in July and August, 1921:

July 6, 1921.—Mr. Victor Hurley, C.M.G., Mr. Alan Newton and Mr. W. D. G. Upjohn, O.B.E.: "Blood Transfusion; Indications for Transfusion; Testing of Donors; Preparations of Patient and Donor; Technique of Operation; After Care."

August 3, 1921.—Mr. A. Fay Maclure, O.B.E.: Paper and Demonstration at the Alfred Hospital: "On the Making and Fitting of Modern Splints and Fracture Beds, Together with a Display of Splints."

The undermentioned have been nominated for election as members of the New South Wales Branch:

Miss Marjory Jean Ross, M.B., Ch.M., 1918 (Univ. Sydney), Royal Alexandra Hospital for Children, Camperdown.

Walter Yuh, Esq., M.B., Ch.M., 1921 (Univ. Sydney), North Street, Marrickville.

Medical Societies.

THE OPHTHALMOLOGICAL SOCIETY OF NEW SOUTH WALES.

A meeting of the Ophthalmological Society of New South Wales was held at the Sydney Hospital on February 2, 1921, Dr. F. Guy Antill Pockley, the President, in the chair.

Dr. E. A. D'Ombrain presented a little girl with a swelling under the upper lid near the inner canthus, with purulent conjunctivitis.

Dr. J. C. Halliday formed the opinion that the swelling was a cyst and recommended its removal.

Dr. J. J. Kelly thought that it was probably an infected cyst.

Dr. J. C. Halliday showed two children with entropion. He had operated on one child at the age of ten months by means of Snellen's sutures. The condition was improved. The other child was only five months of age. He had done nothing beyond advising massage of the lid. The mother had reported that another little girl had had a similar condition and had recovered.

Dr. J. J. Kelly regarded the condition in both children as spasmodic entropion.

Dr. F. Guy Antill Pockley thought that the condition in the younger child was due to epicanthus.

Dr. E. A. D'Ombrain recalled two or three cases in little children. Good results had been obtained by pushing the lower lid in with the fingers. Another small patient had worn spectacle frames without glasses. The contact of the lower edge of the rims had kept the lid in proper position until the eye had recovered.

Dr. Halliday also presented a patient with a congenital angioma of the eye lids with conjunctivitis. The child was seen two weeks after birth. He had tied some of the growth and was still applying electrolysis. Some of the blood vessels in the lids had obviously escaped the treatment up to the time of reporting.

Dr. F. Guy Antill Pockley showed a boy about seven or eight years of age. Two and a half years previously the boy had played with some wire which broke. The end, springing back, had struck him in the eye, causing a perforating wound in the cornea and the iris. A traumatic cataract had resulted, for which he had done a needling. He had not seen the child again until the day of the meeting. He noticed on the margin of the laceration of the iris a small elevated patch of brown pigment, which appeared to be in the structure of the iris. In his opinion the patch had split the iris into two layers about two millimetres in diameter. It had new vessels running into it and there was a slight blotch on the temporal side of the cornea, indicating an inflammatory condition. He regarded it as highly probable that it was a small implantation cyst of the iris. The case would be of interest to the members, since they had seen the large cyst in a patient presented at the last meeting by Dr. Halliday. The history in Dr. Halliday's case was similar to his own. He proposed to keep the patient under observation and, if any signs of increase in the size of the mass appeared, he would do a small iridectomy and remove it.

Dr. J. J. Kelly and Dr. D'Ombrain thought that the discolouration was due to pigment from the posterior surface of the iris.

Dr. Halliday reported that he had attempted to remove the cyst to which Dr. Pockley had referred. The cyst had collapsed and he had been forced to enucleate the eye. If he should meet with another case of this kind, he would do a small iridectomy and endeavour to get the cyst from the cut edge of the iris.

Correspondence.

A PROPOSAL TO ERECT PROFESSIONAL CHAMBERS IN SYDNEY.

Sir: Might I, through the favour of your *Journal*, draw attention to the proposal on foot to form a syndicate to finance the erection of a building in Macquarie Street to

house medical practitioners, dentists, etc.. A meeting will be held in the B.M.A. Library, 30 Elizabeth Street, Sydney, at 8 p.m. on Thursday, June 9 next, to discuss this matter.

The proposal is to erect a large building, members of the syndicate to take up share capital in proportion to the rental value of the accommodation required by them. The scheme is to be run on a co-operative basis and there are no promoters' expenses.

Already a number of men have expressed a desire to take up their share—in certain cases a fairly large share. It is hoped to make the scheme a very comprehensive one and all practitioners who are interested in the proposition are asked to attend the meeting.

Yours, etc.,
J. HOUGHTON BRADLEY, B.D.S..

"Wyoming,"
Macquarie Street, Sydney,
May 26, 1921.

MODERN OBSTETRICS.

Sir: I would like to draw attention to the review by Dr. Felix Meyer of my paper on this subject in which he states "the case for Nature." Dr. Meyer will be interested in the last annual review on obstetrics edited by no less an authority than Professor De Lee, in which the latter states that "labour is no longer a physiologic process," and further quotes the recent pronouncement of the English obstetrician, Dr. Winch, that "he is not in agreement with those who state that labour is a normal physiologic process and should be left to Nature as much as possible. Modern civilization has so changed the average woman that parturition is no longer the easy process it was reputed to be in less civilized times."

On the question of normal labour, without going into the question of contracted pelvis, the views of Professor De Lee and Dr. Meyer are in complete variance. In support of Dr. Lee's contention is the fact that no medical practitioner, so little confidence has he in natural methods, would attend any case of obstetrics unless provided with a full armamentarium of drugs and surgical instruments.

The divergences of opinion only go to show that obstetrics is an art and not a science and will never, as I stated in my paper, be on a scientific basis until we have an answer to the questions: (1) When is the fœtus full time? (2) What factor or factors are necessary to initiate its expulsion from the uterus? In other words, we should spare no effort to discover the natural methods of expulsion and when we know these, we can state "the case for Nature."

In my opinion it is only on a foundation of comparative anatomy that future advances in principles of obstetrics can be made, and the Australian mammals (both *Metatheria* and *Prototheria*) offer an almost unexplored field to the obstetrical investigator. It may interest your readers to know that it is in the Australian bandicoot (*Perameles obesula*) that is seen the commencing formation of a true allantoic placenta, the allantois giving rise to small vascular villi. Yet no dissection of any member of the *Peramelidæ* is available to the medical investigator in Australia. We have to learn why the fœtus of *Phascolomys* (*Implacentalia*), the adult specimen of which shows such a perfect physical character and whose organs are in many respects so like our own, is expelled from the uterus on the 25th day, while the human is retained for 275 days. Hugonnenq's and Hoffström's analysis, as quoted by Dr. Meyer, offer no solution to this question.

If in my paper I have given the stimulus to even a few readers to further investigate the subject along these lines of comparative anatomy, and especially amongst our own mammals before it is too late, I feel I have achieved my object.

Yours, etc.,
MARGARET H. McLORINAN.

Collins Street, Melbourne,
May 27, 1921.

Dr. L. S. Latham has been appointed Lecturer in Medicine at the University of Melbourne in succession to Sir Henry Maudsley.

Proceedings of the Australian Medical Boards.

NEW SOUTH WALES.

The undermentioned have been registered under the provisions of the *Medical Act, 1912 and 1915*, as duly qualified medical practitioners:

Allison, John Robson, M.B., Mast Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Armstrong, Clifton John Barry, M.B., Mast. Surg., 1921 (Univ. Sydney), Sydney Hospital.
Bendeich, Joseph Henry, M.B., Mast. Surg., 1921 (Univ. Sydney), Sydney Hospital.
Bromley, Myrtle Sperrey, M.B., Mast. Surg., 1921 (Univ. Sydney), Roseville.
Bull, Cecil Stuart, M.B., Mast. Surg., 1921, Univ. Sydney), Drummoyne.
Burstal, Alberto Charles Clubbe, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Byrne, John, M.B., Mast Surg., 1921 (Univ. Sydney), St. George's Cottage Hospital, Kogarah.
Chapman, William James, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Chenhall, Hilton William Tillock, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Clouston, Kathleen, M.B., Mast. Surg., 1921 (Univ. Sydney).
Cook, Errol Aufrere, M.B., Mast. Surg., 1921 (Univ. Sydney).
Cunningham, Archibald James, M.B., Mast. Surg., 1921 (Univ. Sydney), Sydney Hospital.
Dalton, William Joseph, M.B., 1921 (Univ. Sydney), Lewisham Hospital.
Davis, Norman Ernest, M.B., Mast. Surg., 1921 (Univ. Sydney), Balmain Hospital.
Edwards, Alan Munro, M.B., Mast. Surg., 1921 (Univ. Sydney), Lewisham Hospital.
Fitzsimmons, James Peter, M.B., Mast. Surg., 1921 (Univ. Sydney), Drummoyne.
Fitzsimmons, Michael Francis, M.B., Mast. Surg., 1921 (Univ. Sydney), Lewisham Hospital.
Fraser, Malcolm Britnell, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Gall, Gerard Hindley Herbert, M.B., Mast. Surg., 1921 (Univ. Sydney), Sydney Hospital.
Geaney, Milton, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Goldsworthy, Neil Ernest, M.B., Mast. Surg., 1921 (Univ. Sydney), Sydney Hospital.
Green, James Carlton, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Hales, Geoffrey Maurice Barnewall, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Hamilton, George Redfearn, M.B., Mast. Surg., 1916 (Univ. Sydney), Sydney Hospital.
Hawke, David William, M.B., 1921 (Univ. Sydney), Sydney Hospital.
Jacobs, William Vincent, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal North Sydney Hospital.
Kem Yee, James Fong, M.B., Mast. Surg., 1921 (Univ. Sydney), Sydney Hospital.
Lawes, Frank Augustus Essery, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Leadley, James Harold Willmott, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Logan, Cedric James, M.B., Mast. Surg., 1921 (Univ. Sydney), Church Street, Parramatta.
McAdam, Francis Victor, M.B., Mast. Surg., 1921 (Univ. Sydney), Mater Misericordiæ Hospital.
McLean, Ivan Alexander, M.B., Mast. Surg., 1921 (Univ. Sydney), Sydney Hospital.
Morrison, Francis Alexander, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal North Sydney Hospital.
Nette, William Henry, M.B., Mast. Surg., 1921 (Univ. Sydney), Mental Hospital, Callan Park.
Paterson, Norman Roy, M.B., 1921 (Univ. Sydney), Glebe Point.
Pettinger, Charles Firth, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal North Sydney Hospital.

Pike, Eric Herbert, M.B., Mast. Surg., 1921 (Univ. Sydney), Summer Hill.
Pittar, Yorke Edwards, M.B., Mast. Surg., 1921 (Univ. Sydney), Wollcott Street, Darlinghurst.
Ryan, William Edmond, M.B., Mast. Surg., 1921 (Univ. Sydney), North Sydney.
Stanley, Percival Hubert, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Susman, Eric Leo, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Susman, Maurice Philip, M.B., Mast. Surg., 1921 (Univ. Sydney), Sydney Hospital.
Sweetapple, Harold Algar, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Taylor, Charles Malcolm, M.B., Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Winston, Charles Edward, M.B., Mast. Surg., 1921 (Univ. Sydney), Sydney Hospital.
Yum, Walter, M.B., Mast. Surg., 1921 (Univ. Sydney), Marrickville.

The undermentioned additional qualifications have been registered:

Blomfield, Cecil Richard, Mast. Surg., 1921 (Univ. Sydney), England.
Davis, Clyde, Mast. Surg., 1921 (Univ. Sydney), Newcastle.
Frecker, Eric Wilfrid, Mast. Surg., 1921 (Univ. Sydney), Kiama.
Holland, Llondha, Llenoi, Mast. Surg., 1921 (Univ. Sydney), Royal Prince Alfred Hospital.
Vance, Edmund Bruce Mortimer, Mast. Surg., 1921 (Univ. Sydney), Leeton.
Graham, Roy Vescys, M.D., 1921 (Univ. Sydney).
Hughes, Laurence Hugh, M.D., 1921 (Univ. Sydney).

As we are going to press we learn that Major-General Sir Neville R. Howse, V.C., K.C.B., K.C.M.G., has been selected for the appointment of Director-General, Australian Army Medical Services. The salary is at the rate of £1,500 a year, including all allowances except travelling, and the appointment is for five years.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xxiii.

Royal North Shore Hospital of Sydney: Honorary Assistant Physician in Charge of Dermatological Department.

Benevolent Society of New South Wales: Resident Medical Officer at the Royal Hospital for Women, Paddington, Sydney.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C..

Branch.	APPOINTMENTS.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIA. (Hon Sec., Medical Society Hall, East Melbourne.)	All Institutes or Medical Dispensaries. Manchester Unity Independent Order of Oddfellows. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Australian Natives' Association. Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.)	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIA. (Hon. Sec., 6 Bank of New South Wales Chambers, St. George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

June 8.—Melb. Pædiatric Society (Vic.).
June 10.—N.S.W. Branch, B.M.A., Clinical.
June 10.—Q. Branch, B.M.A., Council.
June 10.—S. Aust. Branch, B.M.A., Council.
June 14.—N.S.W. Branch, B.M.A., Ethics Committee.
June 14.—Tas. Branch, B.M.A..
June 15.—W. Aust. Branch, B.M.A..
June 16.—Vic. Branch, B.M.A., Council.
June 21.—N.S.W. Branch, B.M.A.: Executive and Finance Committee.
June 23.—Clinical Meeting at the Hospital for Sick Children, Brisbane.
June 24.—Q. Branch, B.M.A., Council.
June 24.—N.S.W. Branch, B.M.A..
June 28.—N.S.W. Branch, B.M.A.: Medical Politics Committee: Organization and Science Committee.
June 29.—Vic. Branch, B.M.A., Council.
June 30.—S. Aust. Branch, B.M.A., Annual.
July 1.—Q. Branch, B.M.A..
July 5.—N.S.W. Branch, B.M.A., Council (Quarterly).
July 6.—Vic. Branch, B.M.A..
July 8.—N.S.W. Branch, B.M.A., Clinical.
July 8.—Q. Branch, B.M.A., Council.
July 8.—S. Aust. Branch, B.M.A., Council.

EDITORIAL NOTICES.

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